Meet the Cannibals! · Stormy Science: Why So Many Hurricanes?

Smithsonian

{ SEPTEMBER 2006 }

Solving the Mystery of Egypt's Hatshepsut

Why Was Her Reign Erased from History?

Bard Brawl—Who Wrote Shakespeare's Plays?

Cougars on the Prowl

Pete Hamill on NYC Five Years Later

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The Korowai are among the very few tribes believed to eat human flesh. They live about 100 miles from the Arafura Sea, which is where Michael Rockefeller, a son of Nelson Rockefeller, disappeared in 1961 while collecting artifacts.

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THIS PAGE: New Guinea's Korowai live in treehouses. Some in remote areas have reportedly never seen white people, whom they call "ghost-demons." Photograph by Paul Raffaele.

COVER: The pharaoh Hatshepsut as Osiris, the Egyptian god of the dead. Photograph courtesy of Werner Forman / Art Resource, New York.

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HUMAN

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Fatal cougar attacks in the United States and Canada are rare—21 in the past 115 years—but 11 have happened since 1990.

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THIS PAGE: Cougars are the fourth largest cat in the world, after tigers, lions and jaguars. They range from Patagonia, in South America, to central Canada. Photograph by David Sailors / Corbis.

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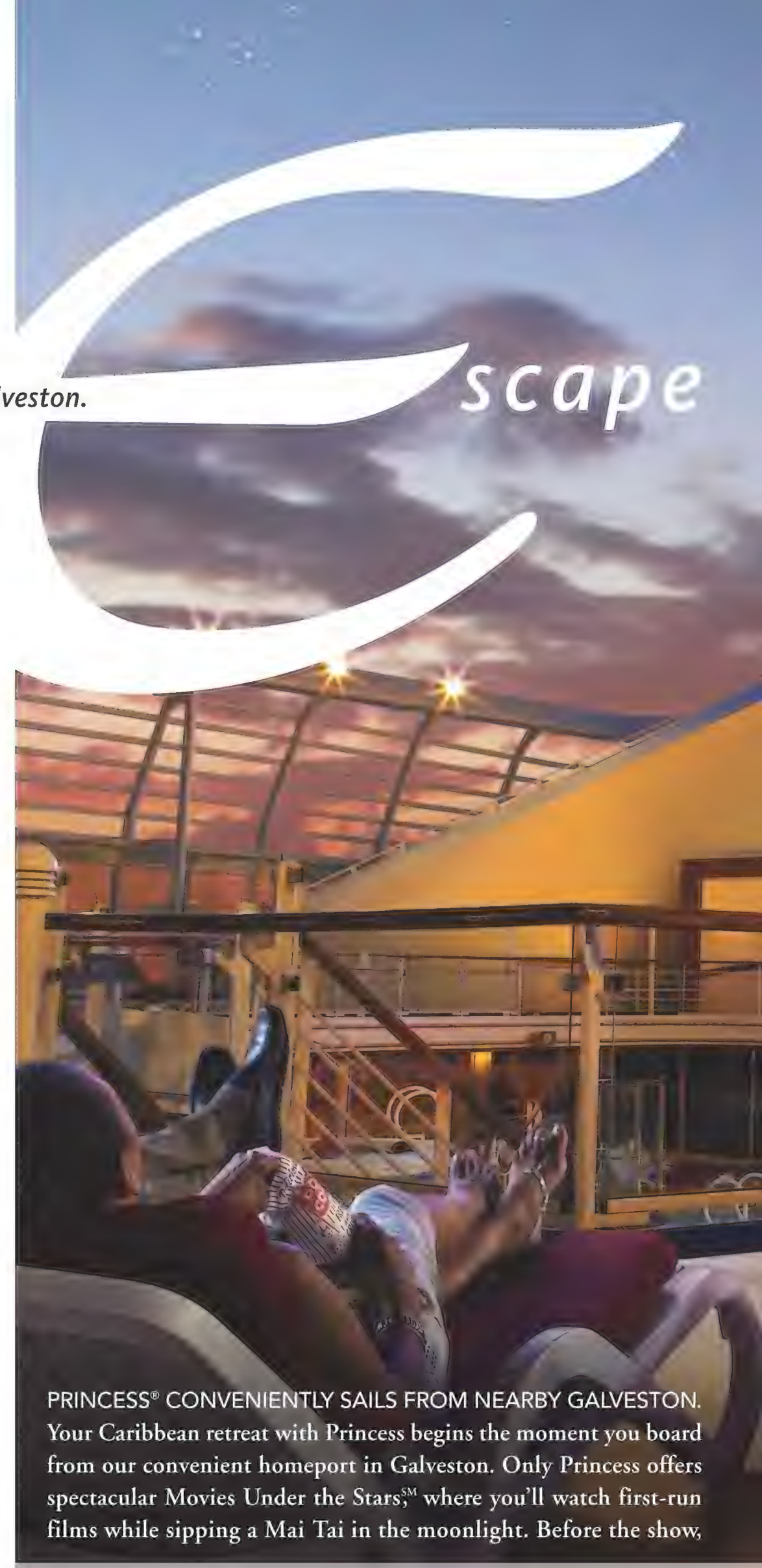

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FROM THE EDITOR

Climate Change

Time often shapes perceptions

BY CAREY WINFREY

ELIZABETH WILSON, who wrote our cover story ("The Queen Who Would Be King," p. 80) about the controversial female pharaoh who ruled Egypt c. 1479-1458 B.C., lives near the Metropolitan Museum of Art in New York City. She was often in the museum's Hatshepsut gallery—part of its permanent collection. Once, a museum guard pointed to a large head of Hatshepsut. "That's my favorite," he said of the fragment of a statue of the pharaoh as the god Osiris. "She's got that Mona Lisa smile." Wilson remembers smiling herself: "I thought, how lovely that after all the [bad] things that have been said about Hatshepsut, there's a guard who stands watch over her with admiration and affection." At the time, Wilson's view of Hatshepsut was the standard one—that she was "this incredible shrew, a power-mad virago who had a torrid affair with her chief minister."

After she began her research for this story, however, Wilson learned that the long-held view of Hatshepsut as a usurper of the throne is almost certainly wrong. "Now we realize that she may have acted out of noble reasons. It's another reminder that history is often a matter of opinion."

Elizabeth Wilson (with Hatshepsut as Sphinx): "Power-mad virago"?

THE STORY IS TOLD that the day after J. Madeleine Nash celebrated her first birthday, in 1944, a storm that came to be known as the Great Atlantic Hurricane struck off the coast of North Carolina, where she and her mother and father, then a naval officer, were living at the time. Baby Madeleine, as family lore has it, stood at the window looking out at the hurricane and clapping her hands with glee. Even if the story is apocryphal, the adult Nash is known, as she admits, "for liking the most extreme, most violent parts of nature, everything from the big bang to hurricanes and tornadoes." The veteran science correspondent for *Time* is the author of *El Niño: Unlocking the Secrets of the Master Weather-Maker*.

In her piece for us ("Storm Warnings," p. 88), Nash finds scientists divided over whether recent increased hurricane intensity is a function of global warming or of a more natural cycle known as the "multi-decadal oscillation." For her part, Nash believes that each is "a piece of a much larger puzzle. I don't see the debate as framing an either-or choice," she says. "I see it as a rather different and much more important question. And that is, given that we're now players in the climate system, how important are we? That's the question that's now been raised in relation to hurricanes, and it's a question that I, for one, find extremely disturbing."

HEADS UP: The deadline for entries for our fourth annual photo contest is 2 p.m. (Eastern Time) January 4, 2007. For rules, please go to our Web site, below.

Visit Smithsonian.com for photo contest rules and more author interviews.

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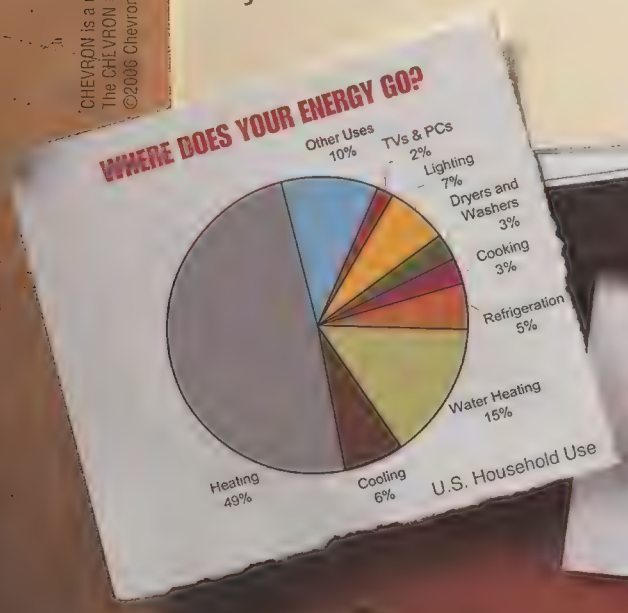

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LETTERS READERS RESPOND TO THE **JULY** ISSUE

In the field behind my auntie Josie's home in Ohio, my siblings and I picked quarts of wild strawberries ("Berried Treasure"). Small yet so flavorful. Though we ate as we picked, there were still plenty for pies and to sprinkle on ice cream. The field was built over in the 1980s. I have been searching for those strawberries ever since.

KATHLEEN LAWSON, PALM BAY, FLORIDA

TOMB RAIDER?

ANCIENT EGYPT and dinosaurs have fascinated me since I was a child. Unearthing dinosaur bones doesn't seem offensive. However, I no longer feel as comfortable about digging up ancient Egyptians ("A Mystery Fit for a Pharaoh"), or any other peoples, for that matter. I can't help but wonder if we, a supposedly enlightened and modern people, are any different from the grave robbers of yesteryear? The items of our plunder and the reasons for their taking have been updated, but, morally, is there really much of a distinction?

BETTY ROME
CULVER CITY, CALIFORNIA

CONSERVATIVE COSTS

I GREATLY ENJOYED the article about preserving wildlife in India and Nepal ("Building an Arc"), and I was struck by how much good a little bit more money would do in the realm of conservation. The article relates how the local people have been provided with gas stoves so they don't have to go into the forests to gather wood—thereby preserving the forests and leaving the wildlife undisturbed—but there is not enough funding for this worthy project. If only our philanthropists would take up the cause of conservation! The long-term health of the human race surely depends on preserving the planet, on keeping healthy large areas of habitat for wild animals and plants.

ROLAND V. LAYTON
LEWISBURG, WEST VIRGINIA

FOOD VERSUS FUEL

MICHAEL POLLAN says that brute-force nitrogen fixation is essential to feeding much of the world's population, but that the energy cost is so great that we need to put a stop to it ("What's Eating America"). It seems to me that the problem is feeding people: he does not suggest alternative means to produce more food or fewer people. He points out that corn is the greatest product of ammonia synthesis, at the expense of vast quantities of fossil fuel. He does not mention that ethanol, largely produced from corn, is currently being promoted as a substitute for fossil fuel. The fossil fuel-ammonia-corn-ethanol cycle seems wasteful, but it is being promoted as a new way to save the earth.

In my food safety courses here at the University of California at Davis, I tell students that the greatest challenge to humanity has been competition for our food supply. Competitors include bacteria and fungi; insects, rodents and birds; animals larger than people; other people; and the internal-combustion engine, via ethanol. I have no magic answer to feeding the world, but regressive technology, including organic farming, can only make things worse. In affluent countries such as the United States, organic farming strikes me as elitist.

DEAN O. CLIVER
DAVIS, CALIFORNIA

GIVE HIM A BREAK

VACATION ADVOCATE Joe Robinson needs some days off ("Interview"). He's right about Americans being overworked, but he should turn his time and talents to lobbying for better wages, health insurance, education, political election reform, making our streets safer, lessening our national addiction to oil, cleaning up the environment, lobbying reform, disaster preparedness, closing the poverty gap, finding a cure for AIDS, bringing our G.I.'s home, etc. I would love to take a three-week holiday, but unless I'm mistaken, I'm going to have to pay for my mortgage, my food and utility bills and the three dollar a gallon gas to that vacation spot.

PHILIP L. ABBONDANZA
CAPE CORAL, FLORIDA

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- are not able to empty your bladder (also called "urinary retention"),
- have delayed or slow emptying of your stomach (also called "gastric retention"),
- have an eye problem called "uncontrolled narrow-angle glaucoma",
- are allergic to VESIcare or any of its ingredients. See the end of this leaflet for a complete list of ingredients.

What should I tell my doctor before starting VESIcare®?
Before starting VESIcare tell your doctor or healthcare professional about all of your medical conditions including if you:
- have any stomach or intestinal problems or problems with constipation,
- have trouble emptying your bladder or you have a weak urine stream,
- have an eye problem called narrow-angle glaucoma,
- have liver problems,
- have kidney problems,
- are pregnant or trying to become pregnant (It is not known if VESIcare can harm your unborn baby.),
- are breastfeeding (It is not known if VESIcare passes into breast milk and if it can harm your baby. You should decide whether to breastfeed or take VESIcare, but not both.).

Before starting on VESIcare, tell your doctor about all the medicines you take including prescription and nonprescription medicines, vitamins, and herbal supplements. While taking VESIcare, tell your doctor or healthcare professional about all changes in the medicines you are taking including prescription and nonprescription medicines, vitamins and herbal supplements. VESIcare and other medicines may affect each other.

How should I take VESIcare®?
Take VESIcare exactly as prescribed. Your doctor will prescribe the dose that is right for you. Your doctor may prescribe the lowest dose if you have certain medical conditions such as liver or kidney problems.
- You should take one VESIcare tablet once a day.
- You should take VESIcare with liquid and swallow the tablet whole.
- You can take VESIcare with or without food.
- If you miss a dose of VESIcare, begin taking VESIcare again the next day. Do not take 2 doses of VESIcare in the same day.
- If you take too much VESIcare or overdose, call your local Poison Control Center or emergency room right away.

What are the possible side effects with VESIcare®?
The most common side effects with VESIcare are:
- blurred vision. Use caution while driving or doing dangerous activities until you know how VESIcare affects you.
- dry mouth.
- constipation. Call your doctor if you get severe stomach area (abdominal) pain or become constipated for 3 or more days.
- heat prostration. Heat prostration (due to decreased sweating) can occur when drugs such as VESIcare are used in a hot environment.

Tell your doctor if you have any side effects that bother you or that do not go away.
These are not all the side effects with VESIcare. For more information, ask your doctor, healthcare professional or pharmacist.

How should I store VESIcare®?
- Keep VESIcare and all other medications out of the reach of children.
- Store VESIcare at room temperature, 50° to 86°F (15° to 30° C). Keep the bottle closed.
- Safely dispose of VESIcare that is out of date or that you no longer need.

General information about VESIcare®
Medicines are sometimes prescribed for conditions that are not mentioned in patient information leaflets. Do not use VESIcare for a condition for which it was not prescribed. Do not give VESIcare to other people, even if they have the same symptoms you have. It may harm them.

This leaflet summarizes the most important information about VESIcare. If you would like more information, talk with your doctor. You can ask your doctor or pharmacist for information about VESIcare that is written for health professionals. You can also call (866) 972-4636 toll free, or visit www.VESICARE.com.

What are the ingredients in VESIcare®?
Active ingredient: solifenacin succinate
Inactive ingredients: lactose monohydrate, corn starch, hypromellose 2910, magnesium stearate, talc, polyethylene glycol 8000 and titanium dioxide with yellow ferric oxide (5 mg VESIcare tablet) or red ferric oxide (10 mg VESIcare tablet)

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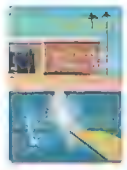


IN THE MAGAZINE · *August 2006*

David Hockney and Friends
As a major retrospective reveals, the portraits of an artist better known for paintings of sunny settings.

Uphill Battle
Scientists worry that the myriad plants and animals of an extraordinary tropical cloud forest may not adapt to a warming planet.

Corn Plastic to the Rescue
Wal-Mart and others are turning to packaging made from corn, touted as cheaper and greener than conventional plastics. But there is more to the story.

Cowboys and Realtors
Even though wealthy newcomers are transforming Montana, residents still buy into a mythical idea of Big Sky Country— with unfortunate consequences.

Waste Into Walls: Building Casas Out of Sand
A green technology guru heads to the dump in search of the stuff of dreams.

Building the New Urbanism
Urban planners take a cue from pre-WWII cities and towns.

Building Sustainable Cities
Cities around the country give sustainability the green light.

PHOTO OF THE DAY

Sail Away River Fest
Yurij Trytjak (South Orange, NJ)
Photographed August 2005, Narrowsburg, NY

TODAY IN HISTORY

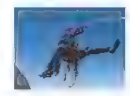
TODAY IN HISTORY

July 24, 1847: Mormons Settle Salt Lake Valley
Church of Jesus Christ of Latter-day Saints president Brigham Young leads 5,000 fellow Mormons from Missouri to establish Salt Lake City.

DID YOU KNOW?

Fact of the Day...
The renovation of the old Patent Office Building lasted more than six years and cost at least $283 million.

FEATURED PHOTOGRAPHERS



Bill Hatcher
Bill has been shooting adventure, science and expedition photography in the remote mountain and desert regions of the world for twenty years.

Brian Smale
Brian Smale is a photographer based in Seattle, Washington.

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Through the Mill

Because of a Lewis Hine photograph, Addie Card became the poster child of child labor. But what became of Addie Card? **BY ELIZABETH WINTHROP**

SHE LEANS casually on her spinning frame, staring out at the camera, dressed in a filthy work smock. Her bare feet, planted firmly, are slick with black grease. Her left arm rests easily on the huge machinery but crooked at a strange angle, as if perhaps a bone had been broken and never set properly. To keep her hair from the frame's hungry grasp, it is pulled tight and pinned in a style befitting a grown woman. A few wispy strays float around her head like a halo. The elements of her face seem perfectly proportioned: the delicate nose, the small ears tucked back, the curve of her lips, the puff of her cheeks. She is a painter's dream. Or a photographer's.

I first saw her four years ago in a show devoted to Lewis Hine's pictures of child workers in Vermont. Hine had been hired by the National Child Labor Committee to bolster its written reports with documentary photographs. Records show that he was a traveling man. From 1908 to 1918, he crisscrossed the country by train and automobile, taking pictures that brought home the hard realities of child labor. Because of Hine, comfortable middle-class Americans were forced to look at children embroidering lace in airless tenements on New York's Lower East Side, selling newspapers on crowded streets in St. Louis, cutting sardines in Eastport, Maine. He

"Anaemic little spinner in North Pownal Cotton Mill" is what Hine wrote.

LIBRARY OF CONGRESS

"She didn't have anything to give, but she gave it," her great-granddaughter Piperlea said.

Addie (second from right) marked victory in Europe in WWII with her daughter (at the wheel) and friends in a New York City photo studio. Hine (below) became famous for his photographs of child laborers, but like many of his subjects he died in poverty.

talked his way into mines in Pennsylvania and West Virginia, where the bounce of his magnesium flash off the whites of a breaker boy's eyes illuminated a blackened, airless landscape. To back up his photographs, Hine scribbled details in a notebook hidden in his pocket. About this sad-eyed Vermont girl he wrote: "Anaemic little spinner in North Pownal [Vt.] Cotton Mill."

Hine took several photographs that August day in 1910, but the image of the girl somebody named Addie Laird is the one that endured. Who was she? Lewis Hine once said that he was "more interested in persons than in people." The same is true of a novelist. Even though I didn't know what had happened to that child, I decided to imagine a life for her. After I finished my novel about her, I began to search for Addie herself.

I had little hope; the U.S. Postal Service had been unable to locate her in 1998, when officials there put Addie's picture on a 32-cent stamp. But it turns out they didn't look hard enough.

I found her in the 1910 Census when I thought to put "Adelaide" and any logical variant into a database search form. On sheet 12B in Bennington County, Vermont, on May 4, 1910, a Census worker recorded a Mrs. Adalaid Harris, listed as head of household living with six orphaned or abandoned grandchildren, including the Card sisters: Anna, female, white, 14 years of age, single; and Addie, female, white, 12 years of age, single.

So Addie's name was not Laird, but Card. That clue led me and fellow researcher Joe Manning down a trail that twisted through town offices, dusty historical societies, funeral homes and Social Security death records.

Hine's little spinner lived the dark side of the American dream, according to records and relatives. Her mother died of peritonitis when Addie was 2. She was put to work in the mill at the age of 8. (She had to stand on a soapbox to reach the bobbins.) She renamed herself Pat and married twice, neither time happily. Months after losing custody of her biological daughter in 1925, she adopted another girl, the newborn illegitimate child of a Portuguese sailor. Mother and daughter moved often from the dreary mill towns of upstate New York to the big city itself, where Addie and friends were captured in a studio photo celebrating victory in Europe.

Recently, Manning and I met with two of Addie's adoptive descendants. We learned that by the time she died, at 94, she was living in low-income housing and surviving on a Social Security check. "She didn't have anything to give, but she gave it," Piperlea Provost, her great-granddaughter, told us. "I could not imagine my life without Grandma Pat's guidance."

Addie never knew that her face ended up in a Reebok advertisement or on a postage stamp issued 100 years after her birth, or that Hine's glass plate negative resides in the Library of Congress. Addie Card LaVigne never knew that she had become a symbol.

Like so many of the subjects of his photographs, Lewis Hine also died in poverty. In the 1930s, the work began to dry up, and he was perceived as rigid and difficult; efforts of friends such as fellow photographer Berenice Abbott to resuscitate his career failed. He died at age 66 on November 3, 1940, a widower whose rent was covered by a friend.

And like Addie, Hine seemed to recede into the mists of history. But his child labor images secured his reputation as a documentarian and as an artist. We return to the photograph of Addie again and again because Hine saw her not just as a symbol but as a "person" with a life beyond the mill. For that reason, the "anaemic little spinner" remains as firmly burned into our national memory as she was etched into the glass of Hine's negative almost a century ago.

ELIZABETH WINTHROP *is the author of* Counting on Grace, *a novel based on the Lewis Hine photograph of Addie Card.*

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INTERVIEW

CHARLAYNE HUNTER-GAULT

JOURNALIST, JOHANNESBURG, SOUTH AFRICA

Her new book says our views of Africa are outdated

BY AMY CRAWFORD

Reporter Charlayne Hunter-Gault, who was one of the first African-American students to attend the University of Georgia, in 1961, has just published her second book, *New News Out of Africa*.

WHAT'S THE NEW NEWS? People in America aren't being provided with even the basics of what's going on in Africa, a continent with 54 countries and over 800 million people. A new group of leaders has been instrumental in establishing new principles of good governance, good fiscal and economic management, respect for human rights, empowerment for women. There's a peer-review process where prominent Africans go into a country and evaluate its performance in those areas. That's unheard of in the post-colonial period.

WHAT ROLE SHOULD THE WEST PLAY IN AFRICA? A lot of the problems that Africa now faces were perpetuated by the West. So there is a debt that needs to be paid. And then there's the U.S. national interest. Look at the crisis now in the Middle East—America needs other sources of oil. Africa has that oil. Equally important in the post-9/11 world is that poverty creates a ready market for terrorists to exploit. Africa stood as a bulwark against Communism, but it could also stand as a bulwark against terrorism, as opposed to being a breeding ground for it.

YOU REPORTED FROM JOHANNESBURG DURING APARTHEID, AND YOU'VE LIVED THERE SINCE 1997. HOW HAS IT CHANGED? It's beginning to develop a rich cultural life, with artists and writers and poets and designers. It's just wonderful seeing a country reborn. When I went there in 1985, it was a very oppressive place, and now the same place is dynamic. It has a buzz to it.

HOW WOULD YOU COMPARE THE CIVIL RIGHTS MOVEMENT IN THE UNITED STATES WITH THAT OF SOUTH AFRICA? In South Africa today you have a black majority and a black-majority government. So government policies are more likely to reflect the aspirations of the people and result in more substantial change. There's certainly a lot more constructive debate that goes on in South Africa on race relations than there is here in the United States. Look how long it took us to challenge "separate but equal"—it wasn't until 1954 that it was overturned. I don't ever caution young people who are frustrated with the pace of change to be more patient. You have to continuously agitate. Democracy isn't perfect, it's a moving thing, and you have to be vigilant to keep it true to its promises.

Visit Smithsonian.com for additional interviews.

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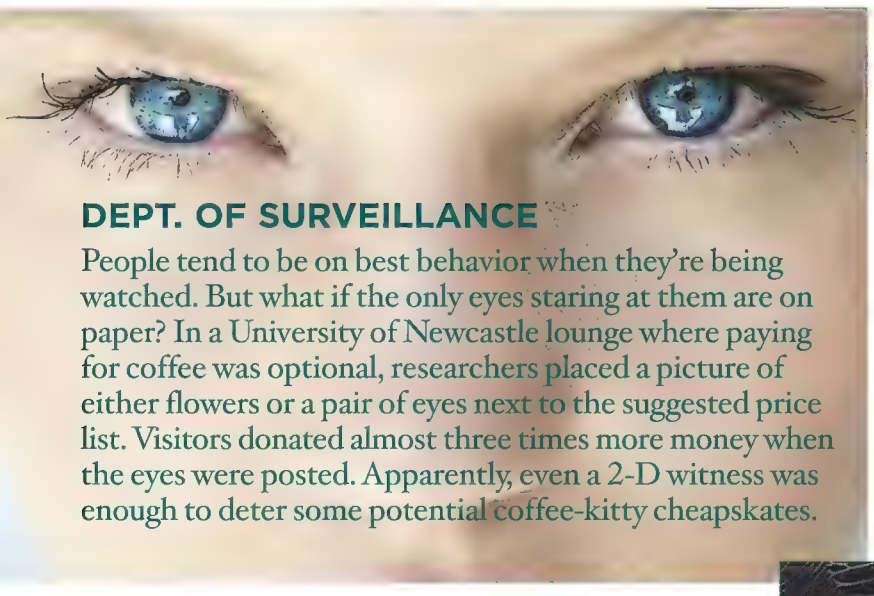
WILD THINGS

LIFE AS WE KNOW IT



DEPT. OF SURVEILLANCE

People tend to be on best behavior when they're being watched. But what if the only eyes staring at them are on paper? In a University of Newcastle lounge where paying for coffee was optional, researchers placed a picture of either flowers or a pair of eyes next to the suggested price list. Visitors donated almost three times more money when the eyes were posted. Apparently, even a 2-D witness was enough to deter some potential coffee-kitty cheapskates.

MEAL PLANNING

Meerkats, those sociable mongooses in southern Africa, have a daunting favored dish: scorpions. So how do meerkat pups learn to eat without getting stung? Gradually, according to a new University of Cambridge study. The researchers found that older meerkats first present pups with dead or disarmed prey. Only after the youngsters get the hang of this cuisine do elders introduce live meals complete with stingers. It's well known that, in many species, animals learn by observing their own kind, but this study is among the first to document wild mammals actively teaching youngsters, including unrelated ones.

DETANGLING HISTORY

Two pieces of Spanish amber contain the oldest known spider web (trapped wasp, inset) and orb-weaving spider; both specimens are at least 110 million years old. The new findings, along with an analysis of the proteins in spider silk, indicate that orb-weaving spiders date as far back as 144 million years. That's when flying insects may have evolved ways to elude spiders, like "dust" on butterfly wings, which prevents them from sticking to webs.

WEATHER MAVENS

Researchers from Scotland's University of St. Andrews followed a group of mangabeys in Uganda's Kabale Forest as the animals foraged for figs and the larvae that infest the fruit. Once the animals ate the takings from a particular tree, they returned to the same spot if the sun had shone for several days, making fruit and larvae mature in the heat. But if it had been cool and cloudy, the mangabeys looked elsewhere for lunch. The observation adds to scientists' growing appreciation of primate intelligence, suggesting that mangabeys, not unlike farmers, take the weather into account when deciding what's ripe for picking.

Observed

NAME: *Holcoglossum amesianum*, a tree-dwelling orchid
INNOVATION: Mateless mating
YOU CAN'T MEAN: Actually, we can. Other flowering plants pollinate themselves, but only with help from birds, insects, wind, gravity or sticky secretions. *H. amesianum* is the only plant known to have sex with itself. Its two pollinating organs sit above the stigma, or female organ; the pollinia swing upward on a flexible shaft, then curve down and into the stigma (clockwise from top left).
WELL, ISN'T THAT SELF-CENTERED: It's also necessary, say the Chinese researchers who observed the plant's sex life. The 1,911 specimens they studied in Yunnan Province flowered in the dry season, when there was no wind, no moisture, no bugs and no birds to help out.

Visit Smithsonian.com for more meerkat pictures.

CLOCKWISE FROM TOP RIGHT: SIMON KING / NATURE PICTURE LIBRARY; SCIENCE; JG PHOTOGRAPHY / ALAMY; LAIQIANG HUANG AND ZHONG-JIAN LIU (4); SAN DIEGO ZOO; DARREN ROBB / GETTY IMAGES

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MY KIND OF TOWN
NEW YORK, NEW YORK

The dread rises at odd moments, says Hamill (at Ground Zero), but then passes.

Five Years Later

Tourists flock to the World Trade Center site, but for New Yorkers, 9/11 is history **BY PETE HAMILL**

THE TOURISTS STILL ARRIVE at the edge of the void. In summer, they wear shorts and T-shirts and baseball caps. In winter, they bundle up against the harbor wind. They don't gawk. They make no stupid jokes.

"It was right over there, Ruth," a beefy man says, pointing to the emptiness where the North Tower once stood. "Remember? When we came to New York that time? We ate at Windows on the World."

"I remember," his wife says and pauses, squinting into the sky. "Up there at the top. The view was amazing."

Yes, it was, and that view has been gone now for five years. Most of today's visitors come from elsewhere in the States, but you hear the languages of the world as they gaze together at the void. Most speak very little. The visitors peer through high wire fences at what has become a 16-acre construction site. They can see the rough accidental cross formed by intersecting steel beams, a remnant of the South Tower. They can hear the hammering of rivet guns and the grinding of heavy machinery, but they can see nothing of the work. Five years later, the building is going on below street level. Still, they come to the site. They assemble as if in prayer, the largest group staring up at the panels of the timeline of September 11, 2001, attached to the fence. Memory is so dense in the air that it seems tangible. Memories of where they were on that terrible day. Memories of happy times spent when the World Trade Center towers still rose to chal-

ALEX WEBB / MAGNUM PHOTOS

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lenge the sky. And then they move on.

That is, they resemble New York itself. For those of us who were here that morning, the horror can rise again at odd moments: at the sound of a police siren, a low-flying airliner, a fire truck screaming to someplace unseen. The heart skips. We pause, look anxiously skyward, and then the moment passes.

New Yorkers have long since moved on. The subject of terrorism seldom comes up anymore. We know only too well that terrorists exist. "But if you think about that all the time, you go nuts," said my friend Raymundo Martinez, who works in the Broadway Café around the corner from where I live in Lower Manhattan. "You can't live afraid. You can't look at your kids and think some nut will kill them, or kill me. You get up and go to work."

Most New Yorkers have donned the armor of a healthy fatalism, which allows them to shrug off the scare stories that appear from time to time. "That's mostly politics," my friend Tim Lee said. "They figure if you get scared bad enough, you might vote for them."

There may be people permanently traumatized by September 11, but there is little sign of them. The city's economy has long since recovered. Real estate and housing cost more than ever. The lines at fashionable restaurants are long. The ballparks, arenas, theaters are full. Times Square and other public plazas are packed. In good weather, parks along the rivers are full of people strolling at dusk, lovers holding hands, joggers and walkers squeezing past bicyclists. Hundreds of them pass within a block of Ground Zero.

There remain some prime targets for terrorists. Most vulnerable, of course, are the subways. But even here, fatalism persists. Daily ridership is up to 4.8 million a day, the highest in years. On the crowded subway trains, you even see people dozing after a long day's work—something they would not have done 15 years ago, when crime was rampant. There are police at certain key stations, watching for signs of danger. But you don't feel that you've descended into the tunnels of a police state.

The true changes to New York since September 11 are more subtle and might be more enduring. To begin with, there is the continuing presence of better manners. New York is a city of dozens of minor collisions; it's part of the deal when there are too many people and too little space. So when someone inadvertently bumps into someone else on the subway and says, "Excuse me," that is a revolutionary change. On any given day, you can see New Yorkers helping old people across the hazardous streets. You can see young men helping women carry baby carriages up the stairs of subway stations. You can see New Yorkers giving directions to obvious tourists (wearing white shoes and holding maps) and even smiling. New Yorkers still live as if they're double-parked, but some sea change has taken place, a recognition that we're all in this together.

Visitors gather as if in prayer. And then they move on.

Much more important to the future of the city, race has faded as a daily, ugly irritation. It has not disappeared; New York is, after all, an American city. But the rhetoric has cooled. Few people, black or white, now insist that race is a single explanation for all of society's ills. One reason is obvious: on September 11, people of all races died. But the endless conflicts of race were also eased by the performance of Mayor Michael Bloomberg, who was elected after September 11 (when Rudolph Giuliani could not run again because of term limits). Giuliani's confrontational style was replaced by Bloomberg's good manners and insistence on intelligent compromise. The Bloomberg approach recognized that not all problems were nails to be hit with hammers. The approach worked.

There are some enduring problems. Most New Yorkers have lost interest in the vehement, crabbed argument over the nature of a memorial to those who died on September 11. That argument has now lasted a year longer than it took the United States to fight its share of World War II. Most of the people I know would like to live long enough to see a memorial rise from the construction site. They'd like to walk around on an autumn afternoon and hear birdsong from the trees and children giggling at play and old men sitting on benches, reading Yeats. But the memorial and the rebuilding no longer matter as much as they once did.

Most New Yorkers are enjoying their city, for as long as it is possible. New York is better now than it has ever been in the seven decades of my lifetime. Poverty has been drastically reduced. The plague of crack cocaine has faded. Schools are better. The streets are safer than they've been since the 1950s. New York, of course, is not a perfect city. It is harder and harder for young working people to find places where they can afford to live. Many of the city's glories—from theaters to restaurants—are too expensive for ordinary citizens. Amid the largest immigration wave in a century, another generation of newcomers is discovering what most New Yorkers have always known: the streets, alas, are not paved with gold.

But in my experience, almost all New Yorkers, old and new, have gotten over September 11, 2001. They face each morning with those qualities that have always helped them through the days and nights: optimism, irony, intelligence and laughter. Prophecy is a fool's game, but I want to believe that even in these demented times, those human qualities will prevail.

PETE HAMILL, *former columnist and editor of the* New York Daily News*, is the author of* Downtown: My Manhattan.

ALEX WEBB / MAGNUM PHOTOS

Visit Smithsonian.com for an interview with author Pete Hamill.

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THIS MONTH IN HISTORY

SEPTEMBER ANNIVERSARIES: MOMENTOUS OR MERELY MEMO

40 YEARS AGO THE FINAL FRONTIER

Captain Kirk and the intrepid crew of the USS *Enterprise* set out to "boldly go where no man has gone before" when "Star Trek" premières September 8, 1966. Poor ratings get the spacey TV series canceled after three seasons, but fervent fans—known as Trekkies—and their dollars propel it to cult status through syndication, four spinoffs and ten movies.

210 YEARS AGO FAREWELL

Seven years after he was sworn into office, George Washington announces his retirement from the presidency, September 19, 1796. "Every day the encreasing weight of years admonishes me more and more, that the shade of retirement is necessary to me as it will be welcome." Washington dies three years later, at 67, of a throat infection.

25 YEARS AGO SOLEMN OATH

September 25, 1981, Sandra Day O'Connor becomes the first female justice on the Supreme Court. O'Connor's court-swinging opinions on such controversial issues as abortion and the death penalty prompt *Forbes* magazine in 2004 to call her the sixth most powerful woman in the world. She retires January 31, 2006.

100 YEARS AGO TYPHOON TERROR

There is no warning on September 18, 1906, when a 77-mph typhoon blows into Hong Kong's busy harbor. Two hours later, 10,000 people are dead, ocean liners perch in the city's streets, and 600 junks—the entire fishing fleet—lie on the harbor bottom. Today a radioed number system warns of typhoons within 500 miles of the city.

340 YEARS AGO FIRE! FIRE! FIRE!

On September 2, 1666, London baker Thomas Farrinor fails to fully smother the embers in his oven before going to bed. Soon his house, and much of the city, is engulfed in flames. It is chaos, reports the *London Gazette*, with people "in night dresses rushing wildly about the streets crying piteously & praying to God." Farrinor's oversight is disastrous: four-fifths of the city, including St. Paul's Cathedral, is toast.

155 YEARS AGO FIT TO PRINT

The *New York Times* begins publication on September 18, 1851. "We intend to issue it every morning (Sundays excepted) for an indefinite number of years to come," say the paper's founders. Some 52,000 issues later (including Sundays since 1861), the "newspaper of record," which has won a total of 94 Pulitzer Prizes, is widely regarded (if also widely reviled) as the best, most influential paper in the United States.

{ BY CHAI WOODHAM }

Visit Smithsonian.com for "Today in History."

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Around the Mall

SCENES AND SIGHTINGS FROM THE SMITHSONIAN MUSEUMS AND BEYOND

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BIG QUESTIONS

There are no pearly gates or shiny halos in Anselm Kiefer's heaven. His 11- by 18-foot painting *The Hierarchy of Angels*—its steel-blue surface is overlaid with chalky yellow paint, pitted by lumps of lead and affixed with an airplane propeller—is more reminiscent of a war zone. But the work of the renowned German painter has never been pretty. Instead, his chaotic paintings and sculptures pose big questions about spirituality and other weighty concerns, as is evident in the first American survey of Kiefer's work in almost 20 years, at the

"I tell stories in order to show what lies behind history," Kiefer (with a 1983 canvas) has said.

MARKUS STUECKLIN | AP | WIDE WORLD PHOTOS

Kiefer sees shades of gray (1994's *Book with Wings*).

KIEFER

{ CONTINUED FROM PAGE 33 }

Smithsonian's Hirshhorn Museum and Sculpture Garden until September 10.

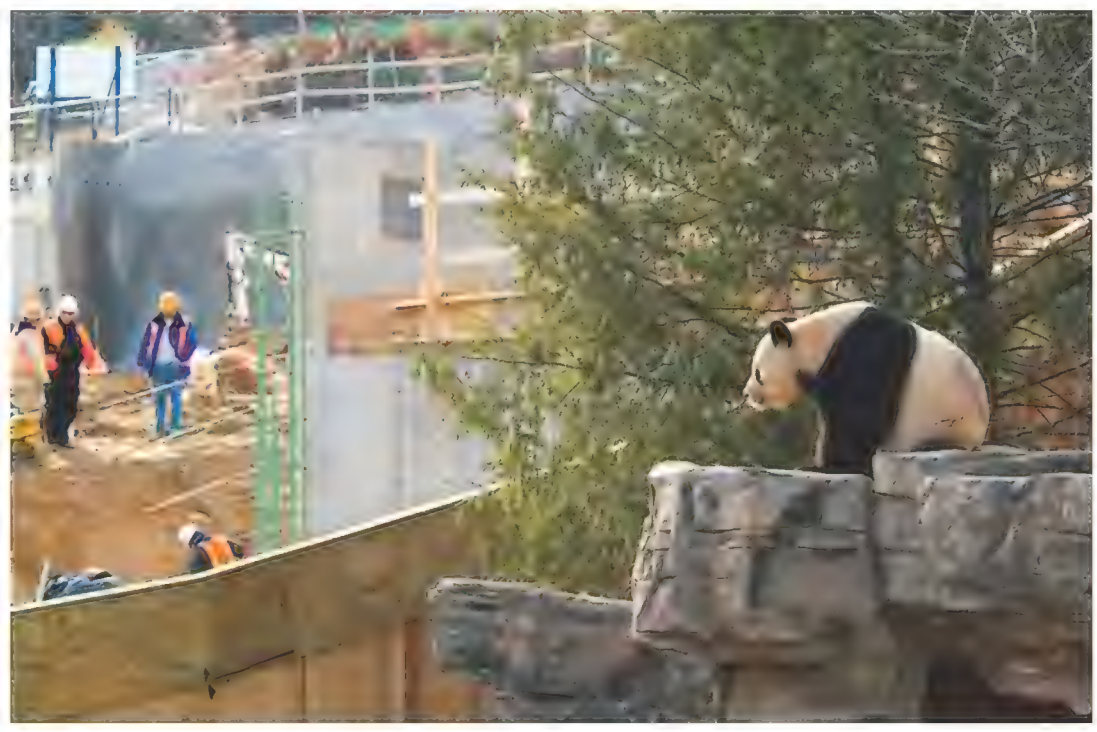
Kiefer, who is famously reclusive and lives on a 200-acre retreat in Barjac, France, pioneered neo-Expressionist art in the 1980s. The movement was partly a reaction against the clinical formalism of modern art, a seemingly instinctive rebellion for Kiefer. His works may include such nontraditional materials as straw, sunflower seeds and barbed wire. Kiefer has also burned his paintings, leaving the canvases scorched and melted or using the charred remains in other works.

Born in Donaueschingen, Germany, in March 1945, just months before World War II ended, Kiefer grew up as a child of the Nazi generation. "For them there was a need to question Nazism and try to understand how their parents let this happen," says Matthew Biro, a University of Michigan art historian and the author of *Anselm Kiefer and the Philosophy of Martin Heidegger*. In Kiefer's earliest works, he addresses the dark side of his German heritage. A photographic series begun more than 30 years ago, "Occupations," shows the artist dressed in military regalia performing the Nazi salute at Rome's Colosseum and other recognizable European locations. "Kiefer deals with the continuing legacy of fascism in Germany. This was rare in the visual arts until he emerged," Biro adds.

Kiefer, who was raised Catholic, takes a dim view of Christianity, which he has condemned as "rigid and not very interesting." But Kiefer has been drawn to the esoteric storytelling and rich symbolism of the cabala, the Jewish mystical tradition. Images from Jewish mysticism—such as the seven heavenly palaces and the *merkaba*, a fiery chariot that journeys to the throne of God—recur in his recent works. Kiefer has also been fascinated by alchemy, the medieval search for an elixir to gain eternal life. His signature material is lead, the metal alchemists used in their ill-fated quest to make gold.

The Secret Life of Plants, a 2001 sculpture, is a six-foot-tall book, upright and open, made entirely of lead. Drawn on the leaves are hundreds of stars labeled with identification numbers assigned by NASA. "This is the scientific heaven. But of course it is all illusion," Kiefer says in a published interview with Michael Auping, curator at the Modern Art Museum of Fort Worth, organizer of the current exhibition. Kiefer says: "Heaven is an idea, a piece of ancient internal knowledge. It is not a physical construction." { BY COURTNEY JORDAN }

Room with a view



Due to open September 20 after two years of construction, the National Zoo's Fujifilm Giant Panda Habitat adds some 12,000 square feet to the outdoor space available to Tian Tian (above, inspecting building progress this past March), his mate, Mei Xiang, and their celebrated 1-year-old, Tai Shan. To better simulate conditions in the pandas' natural habitat—the cloud-covered mountains of Wolong, China—the Zoo has installed, among other things, machines that make mist (which will also be felt by visitors). And the climbing trees, pools and sand pits that the pandas seem to enjoy using have been located close to five new glass-paneled viewing stations. The project's architect, Washington, D.C.-based Leon Chatelain, says there are key differences between designing structures for pandas and people. "Climate control and stimulation are much more critical for these endangered animals," he says. And when designing for human clients, he notes, "we're not encouraging them to reproduce."

Visit Smithsonian.com to learn more about panda conservation.

MODERN ART MUSEUM OF FORT WORTH, TEXAS; JESSIE COHEN / SMITHSONIAN'S NATIONAL ZOO

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FROM THE SECRETARY | Trailblazers

This month, pandas and other exotic creatures go on view at the National Zoo's new Asia Trail

ON SEPTEMBER 20, when the spectacular new Asia Trail at the National Zoo opens, many visitors will rush right to its centerpiece, the Fujifilm Giant Panda Habitat, to see the Zoo's super-celebrity panda cub Tai Shan. But some will no doubt get waylaid watching the antics of an even younger cub, an 8-month-old sloth bear named Balawat—which means "power" in Sinhalese, a national language of Sri Lanka. There will be lots to see at the new sloth bear amphitheater, since sloth bears, despite their name, are very busy bears. Other visitors will be diverted by realistic, luxuriant habitats, some with pools and waterfalls, ideal opportunities to view clouded leopards, Japanese giant salamanders and other exotic creatures.

Asia Trail will offer state-of-the-art interactive displays with comprehensive information about an eclectic mix of fascinating Asian species as well as conservation techniques employed throughout Asia. Among those species will be animals already living at the Zoo, such as fishing cats, Asian small-clawed otters and red pandas, raccoon-like animals that were the first to be called "panda." In their new home, the sloth bears will have plenty of room to enjoy their busy lives—foraging for fruit, digging for insects, huffing and puffing with their long snouts, climbing trees and carrying cubs piggyback (the only bears to carry their young that way). Zoogoers will be able to sit in the amphitheater and watch the shaggy sloth bears use their powerful snouts to suck up snacks from an interactive feeding zone.

Asia Trail will also feature species new to the Zoo, including the endangered Japanese giant salamander, a huge—up to five feet long—creature that looks like it was imagined for a science fiction movie. The Zoo's clouded leopards have not yet been on public display; this month they will make their debut. Scientists at our Conservation and Research Center—collaborating with colleagues in Thailand—have been studying their reproductive biology. These elusive cats are highly threatened by habitat loss, demand for their attractive pelts and poaching (for use in folk medicines).

Clouded leopards (left), rarely seen in the wild, will debut at Asia Trail. Sloth bears (above right) will have their own amphitheater. Red pandas were the first animals to be called "panda."

Asia Trail, including the presence of the giant pandas, is made possible by funding from Congress and generous gifts from Fujifilm and Animal Planet. It is the first step in an ambitious ten-year renovation of the National Zoo. The next project will be Elephant Trails, an innovative, expanded home for Asian elephants and a cornerstone of the Zoo's campaign to save this magnificent species.

Visitors to the Fujifilm Giant Panda Habitat will begin their adventure at the culturally themed Conservation Plaza. They will then see the pandas in their new yard, designed around the giant pandas' behavioral preferences (see article on p. 34). Visitors will even be able to observe the giant pandas up close and sometimes face to face—through a window—as humans and pandas share an artificially cooled rock. And throughout the habitat they will learn about panda science.

The new panda habitat will also highlight something critical to the future of the National Zoo—the public-private partnership between the Smithsonian Institution and Fujifilm. What started as a generous sponsorship has turned out to be so much more, as Fujifilm has supported not only the giant pandas but also the Zoo's efforts in animal care, by donating highly specialized digital medical equipment, creating award-winning educational programs and initiating the Fujifilm Curatorial Residency at the Zoo.

By being global leaders in these fields, as well as in science and sustainability, the National Zoo and Fujifilm can together make great strides toward meeting Zoo director John Berry's lofty ten-year goal: to be recognized as nothing less than the world's finest zoo.

LAWRENCE M. SMALL
SECRETARY OF THE SMITHSONIAN INSTITUTION

Visit Smithsonian.com for more Asia Trail pictures.

CAMERON DAVIDSON; JESSIE COHEN / SMITHSONIAN'S NATIONAL ZOO (3)

LAST CHRISTMAS, JOE'S SON GOT A PRESENT SO UNIQUE, IT TOOK HIS DAD, TWO BANK MANAGERS AND AN ARMED SECURITY GUARD TO OPEN IT.

Christmas Day. Joe Carta's son, Tony, was leaving the next morning for the Caribbean. Then Joe remembered Tony's passport was in their Wachovia safe deposit box. Given the holiday, Joe had no choice but to call his banker at home. Wachovia Financial Center Manager Bonnie Piersol and Teller Manager Carol Weston spent their holiday seeing how they could help. They called Branch Security, and very early the next morning, they were able to access the vault and retrieve the passport Tony needed to make his trip. To us, it's what we mean when we say we're absolutely obsessed with satisfying our customers. To Joe, it meant his son made his flight.

"I'm with Wachovia."

— Joe Carta, Malvern, PA

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THE OBJECT AT HAND

Simon Game

NATIONAL MUSEUM OF AMERICAN HISTORY

SIMONIZED

In 1978, a new electronic toy ushered in the era of computer games

BY OWEN EDWARDS

MANY WHO STUDY tipping points in social history contend that the oft-noted generation gap spontaneously erupted in the mid-1960s, when Jack Weinberg, a 24-year-old leader of the Free Speech Movement in Berkeley, California, told followers not to trust anybody over 30. Others consider it a byproduct of the Beatles song "When I'm Sixty-Four"—the milestone Sir Paul himself reached this past June.

Some of us, however, believe that the great divide can be traced to May 15, 1978, and Studio 54, a once notable New York City nightclub. There, just after midnight, the Milton Bradley Company, in a quirky promotional stunt, introduced an electronic game called Simon. How could a saucer-shaped plastic toy with four colored buttons and four musical notes drive a wedge between the generations? Simon, along with all the successive computer games it ushered in—Pac Mans, Dooms and Quakes—provided irrefutable proof that the young could do certain things far better than their elders. I remember, with a twinge, sitting with my young son, on opposite sides of a blinking, beeping Simon, a chip-driven version of the old kindergarten favorite, Simon Says. On it, a player presses buttons to repeat a sequence of colored lights and tones. As the sequences increase in length, one's memory is pushed harder. Not far into that first game, I realized that my son—his mind unclouded by worries about mortgages or marital missteps—could easily outplay his desperately competitive dad. This revelation was not lost on the boy. By the time I fell back, vanquished, shellacked, Simonized, there yawned between us a generation gap through which you could drive a Tonka truck.

Inventor Ralph Baer (in his Manchester, New Hampshire, lab, top) created the breakthrough portable electronic game Simon (above). Baer says that "coming up with ideas isn't hard."

The mind behind this not-so-simple Simon belongs to Ralph H. Baer, a huge figure in the world of computer games, who came to America from Germany in 1938 at the age of 16, after he was forced to leave school by Nazi anti-Semitism. During World War II, he joined the Army and served in England and Europe. Upon returning home, he got a degree in engineering. Baer is one of those protean inventors who seem to be powerfully inspired by America's competitive commercialism: if you make it—and it works—they will buy.

Recently, the Smithsonian's National Museum of American History collected an early version of Simon, as well as other examples of Baer's work. According to David K. Allison, chair of the Division of Information Technology at NMAH, Baer's career is remarkable for its duality. "What's intriguing about Ralph," he says, "is that he produced such imaginative things while also working full time for a defense contractor." The success of the contracting firm Sanders Associates, Inc., and Baer's contributions to that success, turn out to be key to his inventiveness. "With all that money coming in," Baer

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says, "nobody cared what you did."

Baer's astounding output includes a voice-activated intercom (1949); the first lightgun video game (1967); an interactive video quiz game (1968); a talking aircraft altimeter (1969); a programmable remote record changer (1975); a hand-held gaming machine (1980); a talking bicycle speedometer and odometer (1996); and even a recordable talking doormat, the Chat Mat.

But Simon remains Baer's iconic creation; its story illustrates gamesmanship at the dawn of the electronic age. After creating a series of computer games—including electronic ping-pong—that grew into the pioneering Magnavox Odyssey video system in the early '70s, Baer turned his attention to an Atari arcade game, Touch Me, based on Simon Says, which featured four flashing knobs in a line and what he describes as "raucous accompanying sounds." With the help of Sanders programmer Lenny Cope, Baer re-engineered it as a portable game and substituted four bugle notes, which sounded, he says, pleasing in any sequence.

The prototype, a rectangular box, was licensed to Milton Bradley, eventually evolving into the saucer shape still sold today. A four-foot model of the game hung suspended over the dance floor at Studio 54 on the night it was introduced. Sheer marketing serendipity propelled its popularity, when director Steven Spielberg's film *Close Encounters of the Third Kind* transported extraterrestrials to earth in a spaceship very like a gigantic Simon, complete with communication through repeated musical tones. The toy was an instant hit and remains in production today.

In February, Baer traveled to the White House, where, along with filmmaker George Lucas, he accepted the National Medal of Technology. Ultimately, Baer says, "Coming up with ideas isn't hard. The real challenge is finding the time to actually build something, and then finding a home for it."

OWEN EDWARDS *is executive editor of* Edutopia, *a magazine about education.*

Q&A

STEVE FOSSETT donated his Virgin Atlantic GlobalFlyer to the National Air and Space Museum. On March 3, 2005, after 67 hours aboard the craft, he became the first person to fly alone around the world nonstop. He spoke with our Katy June-Friesen.

WHAT GOT YOU INTERESTED IN ENDURANCE RECORDS? They're not dependent upon coordination or skill. Instead, they're something that just about anyone can do . . . with proper planning and training. So I've thrived because all I have to do is make up my mind to do it.

THE GLOBALFLYER WEB SITE HAD MORE THAN 80 MILLION HITS THE DAY YOU LANDED IN SALINA, KANSAS. WHY SO MUCH INTEREST? My flights harken back to an earlier age of aviation when the public was very excited about what was going on—in the 1920s and '30s when major records were being set.

HAS THERE NOT BEEN MUCH INNOVATION IN AVIATION RECENTLY? Aviation is developing, but in a very subtle way, to be more economically efficient, which isn't very dramatic.

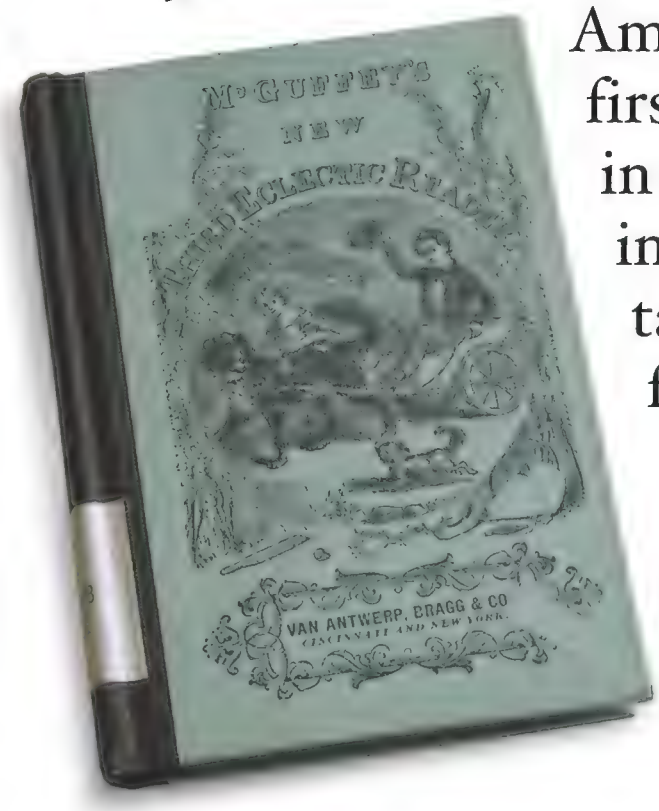
RECENTLY YOU'VE BEEN FLYING A GLIDER. Our Perlan Project is to fly a glider into the stratosphere, and these attempts will take place in September in southern Argentina. With the glider, I'm flying with my copilot, Einar Enevoldson, and we hope to fly to 62,000 feet. The previous record is 49,000 feet by Bob Harris in 1986.

OF ALL THE ADVENTURE "FRONTIERS," WHY FOCUS ON AVIATION? I can identify things that either haven't been done or records that can be broken. Also I'm not really limited by age. Even at 62 I have many years in front of me in which I can pursue aviation records.

Visit Smithsonian.com for more of the Q&A with Steve Fossett.

Who's Counting?

29 McGuffey Readers are in the Smithsonian Libraries. The American primers, first published in 1836 and still in print today, taught figures from Henry Ford to Theodore Roosevelt that A is for Ax.



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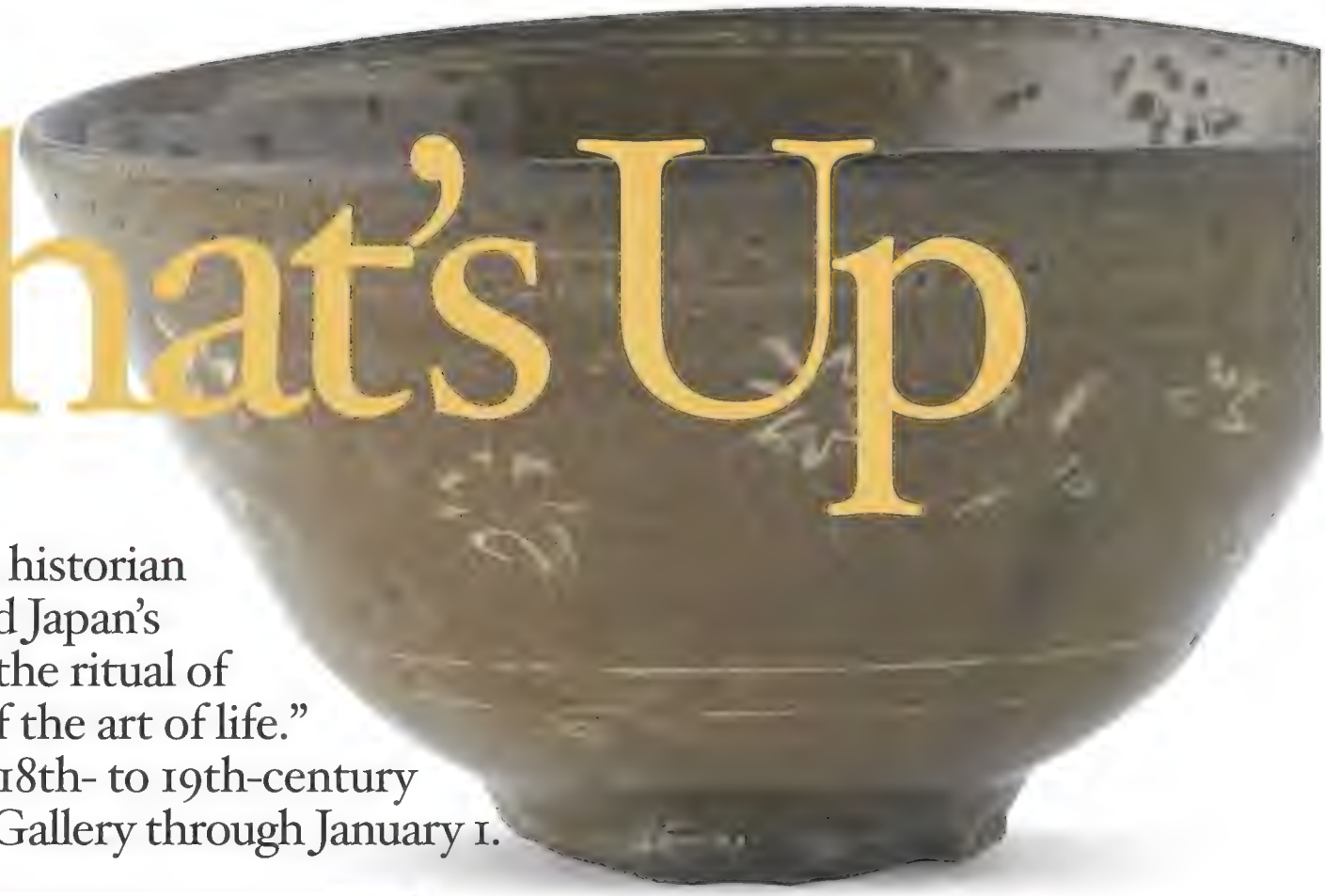
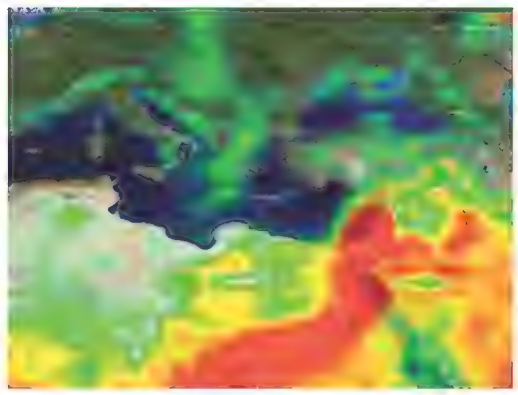


THE TAO OF TEA

In his 1906 *Book of Tea*, historian Okakura Kakuzo called Japan's favorite beverage, and the ritual of making it, "a religion of the art of life." Japanese tea bowls (an 18th- to 19th-century vessel) are at the Freer Gallery through January 1.

NOT JUST PRESIDENTS

Teenagers in giant photographs by Chicago-based Dawoud Bey (his 4- by 3-foot *Michael*, 2001) bring fresh, even funky energy to the hallowed National Portrait Gallery. On view with other recent portraits until January 7.



SOMETHING IN THE AIR

Satellite imagery of man-made and natural air pollutants (Saharan dust travels to the Middle East and Europe) shows how the atmosphere links us all. At the Museum of Natural History until November 30.

CLOCKWISE FROM TOP: FREER GALLERY OF ART, SMITHSONIAN INSTITUTION; NASA; ANDREW GARN; JAMES PRINZ; DAWOUD BEY / RHONA HOFFMAN GALLERY, CHICAGO

BEYOND POTTERY

"It stops me from being bored," says sculptor Ruth Duckworth, explaining why, at 87, she still spends most days in her Chicago studio. Her modernist ceramics (a 1992 wall sculpture) are at the Renwick Gallery until January 15.

{ BY AMY CRAWFORD }

HOME SWEET HOME, 2050

In the future—according to French designer Matali Crasset—houses might have glowing plastic igloos that generate far-out light and music shows. Tour this living room at the Cooper-Hewitt in New York City by September 24.

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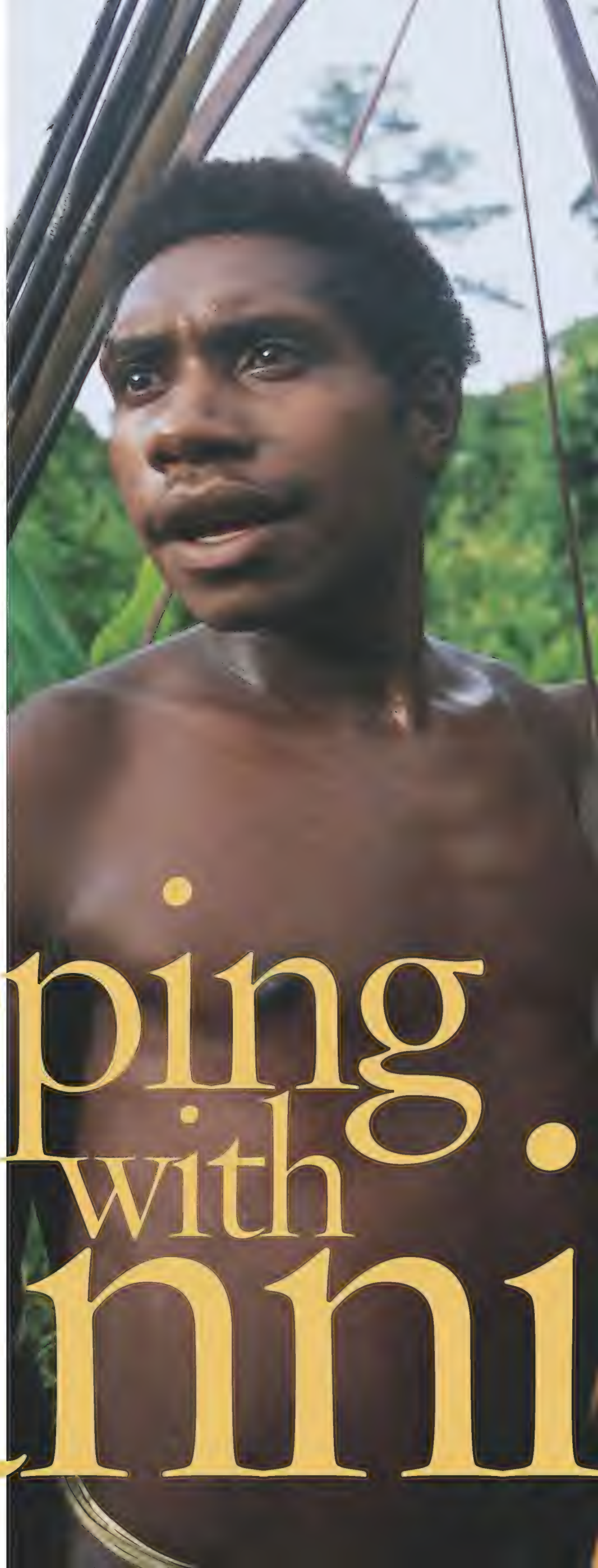
Smithsonian
{ SEPTEMBER 2006 · VOLUME 37, NUMBER 6 }

Our intrepid reporter gets up close and personal with remote New Guinea natives who say they still eat their fellow tribesmen

TEXT AND PHOTOGRAPHS BY
PAUL RAFFAELE

Sleeping with Cannibals



bals

For days I've been slogging through a rain-soaked jungle in Indonesian New Guinea, on a quest to visit members of the Korowai tribe, among the last people on earth to practice cannibalism. Soon after first light this morning I boarded a pirogue, a canoe hacked out of a tree trunk, for the last stage of the journey, along the twisting Ndeiram Kabur River. Now the four paddlers bend their backs with vigor, knowing we will soon make camp for the night.

My guide, Kornelius Kembaren, has traveled among the Korowai for 13 years. But even he has never been this far upriver, because, he says, some Korowai threaten to kill outsiders who enter their territory. Some clans are said to fear those of us with pale skin, and Kembaren says many Korowai have never laid eyes on a white person. They call outsiders *laleo* ("ghost-demons").

Suddenly, screams erupt from around the bend. Moments later, I see a throng of naked men brandishing bows and arrows on the riverbank. Kembaren murmurs to the boatmen to stop paddling. "They're ordering us to come to their side of the river," he whispers to me. "It looks bad, but we can't escape. They'd quickly catch us if we tried."

As the tribesmen's uproar bangs at my ears, our pirogue glides toward the far side of the river. "We don't want to hurt you," Kembaren shouts in Bahasa Indonesia, which one of our boatmen translates into Korowai. "We come in peace." Then two tribesmen slip into a pirogue and start paddling toward us. As they near, I see that their arrows are barbed. "Keep calm," Kembaren says softly.

CANNIBALISM was practiced among prehistoric human beings, and it lingered into the 19th century in some isolated South Pacific cultures, notably in Fiji. But today the Korowai are among the very few tribes believed to eat human flesh. They live about 100 miles inland from the Arafura Sea, which is where Michael Rockefeller, a son of then-New York governor Nelson Rockefeller, disappeared in 1961 while collecting artifacts from another Papuan tribe; his body was never found. Most Korowai still live with little knowledge of the world beyond their homelands and frequently feud with one another. Some are said to kill and eat male witches they call *khakhua*.

PAUL RAFFAELE *is the author of* The Last Tribes on Earth: Journeys Among the World's Most Threatened Cultures.

MIKE REAGAN

The island of New Guinea, the second largest in the world after Greenland, is a mountainous, sparsely populated tropical landmass divided between two countries: the independent nation of Papua New Guinea in the east, and the Indonesian provinces of Papua and West Irian Jaya in the west. The Korowai live in southeastern Papua.

My journey begins at Bali, where I catch a flight across the Banda Sea to the Papuan town of Timika; an American mining company's subsidiary, PT Freeport Indonesia, operates the world's largest copper and gold mine nearby. The Free Papua Movement, which consists of a few hundred rebels equipped with bows and arrows, has been fighting for independence from Indonesia since 1964. Because Indonesia has banned foreign journalists from visiting the province, I entered as a tourist.

After a stopover in Timika, our jet climbs above a swampy marsh past the airport and heads toward a high mountain. Beyond the coast, the sheer slopes rise as high as 16,500 feet above sea level and stretch for 400 miles. Waiting for me at Jayapura, a city of 200,000 on the northern coast near the border with Papua New Guinea, is Kembaren, 46, a Sumatran who came to Papua seeking adventure 16 years ago. He first visited the Korowai in 1993, and has come to know much about their culture, including some of their language. He is clad in khaki shorts and trekking boots, and his unflinching gaze and rock-hard jaw give him the look of a drill sergeant.

The Korowai told the author that *khakhua* (witch) bones are placed on trails to warn their enemies. (Kornelius Kembaren points to a khakhua skull.)

The best estimate is that there are some 4,000 Korowai. Traditionally, they have lived in treehouses, in groups of a dozen or so people in scattered clearings in the jungle; their attachment to their treehouses and surrounding land lies at the core of their identity, Smithsonian Institution anthropologist Paul Taylor noted in his 1994 documentary film about them, *Lords of the Garden*. Over the past few decades, however, some Korowai have moved to settlements established by Dutch missionaries, and in more recent years, some tourists have ventured into Korowai lands. But the deeper into the rain forest one goes, the less exposure the Korowai have had to cultures alien to their own.

After we fly from Jayapura southwest to Wamena, a jumping-off point in the Papuan highlands, a wiry young Korowai approaches us. In Bahasa Indonesia, he says that his name is Boas and that two years ago, eager to see life beyond his treehouse, he hitched a ride on a charter flight from Yaniruma, a settlement at the edge of Korowai territory. He has tried to return home, he says, but no one will take him. Boas says a returning guide has told him that his father was so upset by his son's absence that he has twice burned down his own treehouse. We tell him he can come with us.

The next morning eight of us board a chartered Twin Otter, a workhorse whose short takeoff and landing ability will get us to Yaniruma. Once we're airborne, Kembaren shows me a map: spidery lines marking lowland rivers and thousands of square miles of green jungle. Dutch missionaries who came to convert the Korowai in the late 1970s called it "the hell in the south."

After 90 minutes we come in low, following the snaking Ndeiram Kabur River. In the jungle below, Boas spots his father's treehouse, which seems impossibly high off the ground, like the nest of a giant bird. Boas, who wears a daisy-yellow bonnet, a souvenir of "civilization," hugs me in gratitude, and tears trickle down his cheeks.

At Yaniruma, a line of stilt huts that Dutch missionaries established in 1979, we thump down on a dirt strip carved out of the jungle. Now, to my surprise, Boas says he will postpone his homecoming to continue with us, lured by the promise of adventure with a laleo, and he cheerfully lifts a sack of foodstuffs onto his shoulders. As the pilot hurls the Twin Otter back into the sky, a dozen Korowai men hoist our packs and supplies and trudge toward the jungle in single file bound for the river. Most carry bows and arrows.

THE REV. JOHANNES VELDHUIZEN, a Dutch missionary with the Mission of the Reformed Churches, first made contact with the Korowai in 1978 and dropped plans to convert them to Christianity. "A very powerful mountain god warned the Korowai that their world would be destroyed by an earthquake if outsiders came into their land to change their customs," he told me by phone from the Netherlands a few years ago. "So we went as guests, rather than as conquerors, and never put any pressure on the Korowai to change their ways." The Rev. Gerrit van Enk, another Dutch missionary and co-author of *The Korowai of Irian Jaya*, coined the term "pacification line" for the imaginary border separating Korowai clans accustomed to outsiders from those farther north. In a separate phone interview from the Netherlands, he told me that he had never gone beyond the pacification line because of possible dan-

ger from Korowai clans there hostile to the presence of laleo in their territory.

As we pass through Yaniruma, I'm surprised that no Indonesian police officer demands to see the government permit issued to me allowing me to proceed. "The nearest police post is at Senggo, several days back along the river," Kembaren explains. "Occasionally a medical worker or official comes here for a few days, but they're too frightened to go deep into Korowai territory."

Entering the Korowai rain forest is like stepping into a giant watery cave. With the bright sun overhead I breathe easily, but as the porters push through the undergrowth, the tree canopy's dense weave plunges the world into a verdant gloom. The heat is stifling and the air drips with humidity. This is the haunt of giant spiders, killer snakes and lethal microbes. High in the canopy, parrots screech as I follow the porters along a barely visible track winding around rain-soaked trees and primeval palms. My shirt clings to my back, and I take frequent swigs at my water bottle. The annual rainfall here is around 200 inches, making it one of the wettest places on earth. A sudden downpour sends raindrops spearing through gaps in the canopy, but we keep walking.

Korowai believe that after a khakhua takes a man's form, he consumes a victim from the inside out; an identified khakhua is killed and eaten as an act of retribution. Kilikili (above, with a skull he says is from a khakhua) says he has killed no fewer than 30 of them.

The local Korowai have laid logs on the mud, and the barefoot porters cross these with ease. But, desperately trying to balance as I edge along each log, time and again I slip, stumble and fall into the sometimes waist-deep mud, bruising and scratching my legs and arms. Slippery logs as long as ten yards bridge the many dips in the land. Inching across like a tightrope walker, I wonder how the porters would get me out of the jungle were I to fall and break a leg. "What the hell am I doing here?" I keep muttering, though I know the answer: I want to encounter a people who are said to still practice cannibalism.

Hour melts into hour as we push on, stopping briefly now and then to rest. With night near, my heart surges with relief when shafts of silvery light slip through the trees ahead: a clearing. "It's Manggel," Kembaren says—another village set up by Dutch missionaries. "We'll stay the night here."

Korowai children with beads about their necks come running to point and giggle as I stagger into the village—several straw huts perched on stilts and overlooking the river. I notice there are no old people here. "The Korowai have hardly any medicine to combat the jungle diseases or cure battle wounds, and so the death rate is high," Kembaren explains. "People rarely live to middle age." As van Enk writes, Korowai routinely fall to interclan conflicts; diseases, including malaria, tuberculosis, elephantiasis and anemia, and what he calls "the khakhua complex." The Korowai have no knowledge of the deadly germs that infest their jungles, and so believe that mysterious deaths must be caused by khakhua, or witches who take on the form of men.

After we eat a dinner of river fish and rice, Boas joins me in a hut and sits cross-legged on the thatched floor, his dark eyes reflecting the gleam from my flashlight, our only source of light. Using Kembaren as translator, he explains why the Korowai kill and eat their fellow tribesmen. It's because of the khakhua, which comes disguised as a relative or friend of a person he wants to kill. "The khakhua eats the victim's insides while he sleeps," Boas explains, "replacing them with fireplace ash so the victim does not know he's being eaten. The khakhua finally kills the person by shooting a magical arrow into his heart." When a clan member dies, his or her male relatives and friends seize and kill the khakhua. "Usually, the [dying] victim whispers to his relatives the name of the man he knows is the khakhua," Boas says. "He may be from the same or another treehouse."

I ask Boas whether the Korowai eat people for any other reason or eat the bodies of enemies they've killed in battle. "Of course not," he replies, giving me a funny look. "We don't eat humans, we only eat khakhua."

The killing and eating of khakhua has reportedly declined among tribespeople in and near the settlements. Rupert Stasch, an anthropologist at Reed College in Portland, Oregon, who has lived among the Korowai for 16 months and studied their culture, writes in the journal *Oceania* that Ko-

rowai say they have "given up" killing witches partly because they were growing ambivalent about the practice and partly in reaction to several incidents with police. In one in the early '90s, Stasch writes, a Yaniruma man killed his sister's husband for being a khakhua. The police arrested the killer, an accomplice and a village head. "The police rolled them around in barrels, made them stand overnight in a leech-infested pond, and forced them to eat tobacco, chili peppers, animal feces, and unripe papaya," he writes. Word of such treatment, combined with Korowais' own ambivalence, prompted some to limit witch-killing even in places where police do not venture.

Still, the eating of khakhua persists, according to my guide, Kembaren. "Many khakhua are murdered and eaten each year," he says, citing information he says he has gained from talking to Korowai who still live in treehouses.

ON OUR THIRD DAY OF trekking, after hiking from soon after sunrise to dusk, we reach Yafufla, another line of stilt huts set up by Dutch missionaries. That night, Kembaren takes me to an open hut overlooking the river, and we sit by a small campfire. Two men approach through the gloom, one in shorts, the other naked save for a necklace of prized pigs' teeth and a leaf wrapped about the tip of his penis. "That's Kilikili," Kembaren whispers, "the most notorious khakhua killer." Kilikili carries a bow and barbed arrows. His eyes are empty of expression, his lips are drawn in a grimace and he walks as soundlessly as a shadow.

After his parents died, Wawa, 6, was accused by his clan members of being a khakhua. His uncle took the boy from his treehouse to live in a settlement.

The other man, who turns out to be Kilikili's brother Bailom, pulls a human skull from a bag. A jagged hole mars the forehead. "It's Bunop, the most recent khakhua he killed," Kembaren says of the skull. "Bailom used a stone ax to split the skull open to get at the brains." The guide's eyes dim. "He was one of my best porters, a cheerful young man," he says.

Bailom passes the skull to me. I don't want to touch it, but neither do I want to offend him. My blood chills at the feel of naked bone. I have read stories and watched documentaries about the Korowai, but as far as I know none of the reporters and filmmakers had ever gone as far upriver as we're about to go, and none I know of had ever seen a khakhua's skull.

The fire's reflection flickers on the brothers' faces as Bailom tells me how he killed the khakhua, who lived in Yafufla, two years ago. "Just before my cousin died he told me that Bunop was a khakhua and was eating him from the inside," he says, with Kembaren translating. "So we caught him, tied him up and took him to a stream, where we shot arrows into him."

Bailom says that Bunop screamed for mercy all the way, protesting that he was not a khakhua. But Bailom was unswayed. "My cousin was close to death when he told me and would not lie," Bailom says.

At the stream, Bailom says, he used a stone ax to chop off the khakhua's head. As he held it in the air and turned it away from the body, the others chanted and dismembered Bunop's body. Bailom, making chopping movements with his hand, explains: "We cut out his intestines and broke open the rib cage, chopped off the right arm attached to the right rib cage, the left arm and left rib cage, and then both legs."

The body parts, he says, were individually wrapped in banana leaves and distributed among the clan members. "But I kept the head because it belongs to the family that killed the khakhua," he says. "We cook the flesh like we cook pig, placing palm leaves over the wrapped meat together with burning hot river rocks to make steam."

Some readers may believe that these two are having me on—that they are just telling a visitor what he wants to hear—and that the skull came from someone who died from some other cause. But I believe they were telling the truth. I spent eight days with Bailom, and everything else he told me proved factual. I also checked with four other Yafufla men who said they had joined in the killing, dismembering and eating of Bunop, and the details of their accounts mirrored reports of khakhua cannibalism by Dutch missionaries who lived among the Korowai for several years. Kembaren clearly accepted Bailom's story as fact.

Around our campfire, Bailom tells me he feels no remorse. "Revenge is part of our culture, so when the khakhua eats a person, the people eat the khakhua," he says. (Taylor, the Smithsonian Institution anthropologist, has described khakhua-eating as "part of a system of justice.") "It's normal," Bailom says. "I don't feel sad I killed Bunop, even though he was a friend."

In cannibal folklore, told in numerous books and articles, human flesh is said to be known as "long pig" because of its similar taste. When I mention this, Bailom shakes his head. "Human flesh tastes like young cassowary," he says, referring to a local ostrich-like bird. At a khakhua meal, he says, both men and women—children do not attend—eat

everything but bones, teeth, hair, fingernails and toenails and the penis. "I like the taste of all the body parts," Bailom says, "but the brains are my favorite." Kilikili nods in agreement, his first response since he arrived.

When the khakhua is a member of the same clan, he is bound with rattan and taken up to a day's march away to a stream near the treehouse of a friendly clan. "When they find a khakhua too closely related for them to eat, they bring him to us so we can kill and eat him," Bailom says.

He says he has personally killed four khakhua. And Kilikili? Bailom laughs. "He says he'll tell you now the names of 8 khakhua he's killed," he replies, "and if you come to his treehouse upriver, he'll tell you the names of the other 22."

I ask what they do with the bones.

"We place them by the tracks leading into the treehouse clearing, to warn our enemies," Bailom says. "But the killer gets to keep the skull. After we eat the khakhua, we beat loudly on our treehouse walls all night with sticks" to warn other khakhua to stay away.

"I see you're just like us," Lepeadon (right) told the author after receiving him in the Letin clan treehouse. Lepeadon ended their initial meeting by chanting, *"Nemayokh"* ("friend"). Three days later, the visitors (opposite) began the journey back downriver.

As we walk back to our hut, Kembaren confides that "years ago, when I was making friends with the Korowai, a man here at Yafufla told me I'd have to eat human flesh if they were to trust me. He gave me a chunk," he says. "It was a bit tough but tasted good."

That night it takes me a long time to get to sleep.

The next morning Kembaren brings to the hut a 6-year-old boy named Wawa, who is naked except for a necklace of beads. Unlike the other village children, boisterous and smiling, Wawa is withdrawn and his eyes seem deeply sad. Kembaren wraps an arm around him. "When Wawa's mother died last November—I think she had TB, she was very sick, coughing and aching—people at his treehouse suspected him of being a khakhua," he says. "His father died a few months earlier, and they believed [Wawa] used sorcery to kill them both. His family was not powerful enough to protect him at the treehouse, and so this January his uncle escaped with Wawa, bringing him here, where the family is stronger." Does Wawa know the threat he is facing? "He's heard about it from his relatives, but I don't think he fully understands that people at his treehouse want to kill and eat him, though they'll probably wait until he's older, about 14 or 15, before they try. But while he stays at Yafufla, he should be safe."

Soon the porters heft our equipment and head toward the jungle. "We're taking the easy way, by pirogue," Kembaren tells me. Bailom and Kilikili, each gripping a bow and arrows, have joined the porters. "They know the clans upriver better than our Yaniruma men," Kembaren explains.

Bailom shows me his arrows, each a yard-long shaft bound with vine to an arrowhead designed for a specific prey. Pig arrowheads, he says, are broad-bladed; those for birds, long and narrow. Fish arrowheads are pronged, while the arrowheads for humans are each a hand's span of cassowary bone with six or more barbs carved on each side—to ensure terrible damage when cut away from the victim's flesh. Dark bloodstains coat these arrowheads.

I ask Kembaren if he is comfortable with the idea of two cannibals accompanying us. "Most of the porters have probably eaten human flesh," he answers with a smile.

KEMBAREN leads me down to the Ndeiram Kabur River, where we board a long, slender pirogue. I settle in the middle, the sides pressing against my body. Two Korowai paddlers stand at the stern, two more at the bow, and we push off, steering close by the riverbank, where the water flow is slowest. Each time the boatmen maneuver the pirogue around a sandbar, the strong current in the middle of the river threatens to tip us over. Paddling upriver is tough, even for the muscular boatmen, and they frequently break into Korowai song timed to the slap of the paddles against the water, a yodeling chant that echoes along the riverbank.

High green curtains of trees woven with tangled streamers of vine shield the jungle. A siren scream of cicadas pierces the air. The day passes in a blur, and night descends quickly.

And that's when we are accosted by the screaming men on the riverbank. Kembaren refuses to come to their side of the

river. "It's too dangerous," he whispers. Now the two Korowai armed with bows and arrows are paddling a pirogue toward us. I ask Kembaren if he has a gun. He shakes his head no.

As their pirogue bumps against ours, one of the men growls that laleo are forbidden to enter their sacred river, and that my presence angers the spirits. Korowai are animists, believing that powerful beings live in specific trees and parts of rivers. The tribesman demands that we give the clan a pig to absolve the sacrilege. A pig costs 350,000 rupiahs, or about $40. It's a Stone Age shakedown. I count out the money and pass it to the man, who glances at the Indonesian currency and grants us permission to pass.

What use is money to these people? I ask Kembaren as our boatmen paddle to safety upriver. "It's useless here," he answers, "but whenever they get any money, and that's rare, the clans use it to help pay bride prices for Korowai girls living closer to Yaniruma. They understand the dangers of incest, and so girls must marry into unrelated clans."

About an hour farther up the river, we pull up onto the bank, and I scramble up a muddy slope, dragging myself over the slippery rise by grasping exposed tree roots. Bailom and the porters are waiting for us and wearing worried faces. Bailom says that the tribesmen knew we were coming because they had intercepted the porters as they passed near their treehouses.

Would they really have killed us if we hadn't paid up? I ask Bailom, through Kembaren. Bailom nods: "They'd have let you pass tonight because they knew you'd have to return downriver. Then, they'd ambush you, some firing arrows from the riverbank and others attacking at close range in their pirogues."

The porters string all but one of the tarpaulins over our supplies. Our shelter for the night is four poles set in a square about four yards apart and topped by a tarp with open sides. Soon after midnight a downpour drenches us. The wind sends my teeth chattering, and I sit disconsolately hugging my knees. Seeing me shivering, Boas pulls my body against his for warmth. As I drift off, deeply fatigued, I have the strangest thought: this is the first time I've ever slept with a cannibal.

WE LEAVE AT FIRST LIGHT, still soaked. At midday our pirogue reaches our destination, a riverbank close by the treehouse, or *khaim*, of a Korowai clan that Kembaren says has never before seen a white person. Our porters arrived before us and have already built a rudimentary hut. "I sent a Korowai friend here a few days ago to ask the clan to let us visit them," Kembaren says. "Otherwise they'd have attacked us."

I ask why they've given permission for a laleo to enter their sacred land. "I think they're as curious to see you, the ghost-demon, as you are to see them," Kembaren answered.

At midafternoon, Kembaren and I hike 30 minutes through dense jungle and ford a deep stream. He points ahead to a treehouse that looks deserted. It perches on a decapitated banyan tree, its floor a dense latticework of boughs and strips of wood. It's about ten yards off the ground. "It belongs to the Letin clan," he says. Korowai are formed into what anthropologists call patriclans, which inhabit ancestral lands and trace ownership and genealogy through the male line.

The author declined the breakfast of a frog and insects brought to him by four Korowai women. Their circular scars are beauty marks made with bark embers. Opposite: Khanduop says goodbye to his son, Boas (in hat), as the young man leaves to live in a settlement.

A young cassowary prances past, perhaps a family pet. A large pig, flushed from its hiding place in the grass, dashes into the jungle. "Where are the Korowai?" I ask. Kembaren points to the treehouse. "They're waiting for us."

I CAN HEAR VOICES as I climb an almost vertical pole notched with footholds. The interior of the treehouse is wreathed in a haze of smoke rent by beams of sunlight. Young men are bunched on the floor near the entrance. Smoke from hearth fires has coated the bark walls and sago-leaf ceiling, giving the hut a sooty odor. A pair of stone axes, several bows and arrows and net bags are tucked into the leafy rafters. The floor creaks as I settle cross-legged onto it.

Four women and two children sit at the rear of the tree-

house, the women fashioning bags from vines and studiously ignoring me. "Men and women stay on different sides of the treehouse and have their own hearths," says Kembaren. Each hearth is made from strips of clay-coated rattan suspended over a hole in the floor so that it can be quickly hacked loose, to fall to the ground, if a fire starts to burn out of control.

A middle-aged man with a hard-muscled body and a bulldog face straddles the gender dividing line. Speaking through Boas, Kembaren makes small talk about crops, the weather and past feasts. The man grips his bow and arrows and avoids my gaze. But now and then I catch him stealing glances in my direction. "That's Lepeadon, the clan's *khen-mengga-abül*, or 'fierce man,'" Kembaren says. The fierce man leads the clan in fights. Lepeadon looks up to the task.

"A clan of six men, four women, three boys and two girls live here," Kembaren says. "The others have come from nearby treehouses to see their first laleo."

After an hour of talk, the fierce man moves closer to me and, still unsmiling, speaks. "I knew you were coming and expected to see a ghost, but now I see you're just like us, a human," he says, as Boas translates to Kembaren and Kembaren translates to me.

A youngster tries to yank my pants off, and he almost succeeds amid a gale of laughter. I join in the laughing but keep a tight grip on my modesty. The Rev. Johannes Veldhuizen had told me that Korowai he'd met had thought him a ghost-demon until they spied him bathing in a stream and saw that he came equipped with all the requisite parts of a *yanop*, or human being. Korowai seemed to have a hard time understanding clothing. They call it *laleo-khal*, "ghost-demon skin," and Veldhuizen told me they believed his shirt and pants to be a magical epidermis that he could don or remove at will.

"We shouldn't push the first meeting too long," Kembaren now tells me as he rises to leave. Lepeadon follows us to the ground and grabs both my hands. He begins bouncing up and down and chanting, "*nemayokh*" ("friend"). I keep up with him in what seems a ritual farewell, and he swiftly increases the pace until it is frenzied, before he suddenly stops, leaving me breathless.

"I've never seen that before," Kembaren says. "We've just experienced something very special." It was certainly special to me. In four decades of journeying among remote tribes, this is the first time I've encountered a clan that has evidently never seen anyone as light-skinned as me. Enthralled, I find my eyes tearing up as we return to our hut.

A traditional way of life, exemplified by Lepeadon (far left) and the Letin clan's treehouse, still prevails in the more remote areas of Korowai territory. But it is changing downriver, as some tribespeople move back and forth between their treehouses and the settlements.

THE NEXT MORNING four Korowai women arrive at our hut carrying a squawking green frog, several locusts and a spider they say they just caught in the jungle. "They've brought your breakfast," Boas says, smiling as his gibe is translated. Two years in a Papuan town has taught him that we laleo wrinkle our noses at Korowai delicacies. The young women have circular scars the size of large coins running the length of their arms, around the stomach and across their breasts. "The marks make them look more beautiful," Boas says.

He explains how they are made, saying circular pieces of bark embers are placed on the skin. It seems an odd way to add beauty to the female form, but no more bizarre than tattoos, stiletto-heel shoes, Botox injections or the not-so-ancient Chinese custom of slowly crushing infant girls' foot bones to make their feet as small as possible.

Kembaren and I spend the morning talking to Lepeadon and the young men about Korowai religion. Seeing spirits in nature, they find belief in a single god puzzling. But they too recognize a powerful spirit, named Ginol, who created the present world after having destroyed the previous four. For as long as the tribal memory reaches back, elders sitting around fires have told the younger ones that white-skinned ghost-demons will one day invade Korowai land. Once the laleo arrive, Ginol will obliterate this fifth world. The land will split apart, there will be fire and thunder, and mountains will drop from the sky. This world will shatter, and a new one will take its place. The prophecy is, in a way, bound to be fulfilled as more young Korowai move between

{ CONTINUED ON PAGE 59 }

their treehouses and downriver settlements, which saddens me as I return to our hut for the night.

The Korowai, believing that evil spirits are most active at night, usually don't venture out of their treehouses after the sun sets. They divide the day into seven distinct periods—dawn, sunrise, midmorning, noon, midafternoon, dusk and night. They use their bodies to count numbers. Lepeadon shows me how, ticking off the fingers of his left hand, then touching his wrist, forearm, elbow, upper arm, shoulder, neck, ear and the crown of the head, and moving down the other arm. The tally comes to 25. For anything greater than that, the Korowai start over and add the word *laifu*, meaning "turn around."

In the afternoon I go with the clan to the sago palm fields to harvest their staple food. Two men hack down a sago palm, each with a hand ax made from a fist-size chunk of hard, dark stone sharpened at one end and lashed with vine to a slim wooden handle. The men then pummel the sago pith to a pulp, which the women sluice with water to produce a dough they mold into bite-size pieces and grill.

A snake that falls from the toppling palm is swiftly killed. Lepeadon then loops a length of rattan about a stick and rapidly pulls it to and fro next to some shavings on the ground, producing tiny sparks that start a fire. Blowing hard to fuel the growing flame, he places the snake under a pile of burning wood. When the meat is charred, I'm offered a piece of it. It tastes like chicken.

On our return to the treehouse, we pass banyan trees, with their dramatic, aboveground root flares. The men slam their heels against these appendages, producing a thumping sound that travels across the jungle. "That lets the people at the treehouse know they're coming home, and how far away they are," Kembaren tells me.

My three days with the clan pass swiftly. When I feel they trust me, I ask when they last killed a khakhua. Lepeadon says it was near the time of the last sago palm feast, when several hundred Korowai gathered to dance, eat vast quantities of sago palm maggots, trade goods, chant fertility songs and let the marriage-age youngsters eye one another. According to our porters, that dates the killing to just over a year ago.

Lepeadon tells Boas he wants me to stay longer, but I have to return to Yaniruma to meet the Twin Otter. As we board the pirogue, the fierce man squats by the riverside but refuses to look at me. When the boatmen push away, he leaps up, scowls, thrusts a cassowary-bone arrow across his bow, yanks on the rattan string and aims at me. After a few moments, he smiles and lowers the bow—a fierce man's way of saying goodbye.

IN MIDAFTERNOON, the boatmen steer the pirogue to the edge of a swamp forest and tie it to a tree trunk. Boas leaps out and leads the way, setting a brisk pace. After an hour's trek, I reach a clearing about the size of two football fields and planted with banana trees. Dominating it is a treehouse that soars about 75 feet into the sky. Its springy floor rests on several natural columns, tall trees cut off at the point where branches once flared out.

Boas is waiting for us. Next to him stands his father, Khanduop, a middle-aged man clad in rattan strips about his waist and a leaf covering part of his penis. He grabs my hand and thanks me for bringing his son home. He has killed a large pig for the occasion, and Bailom, with what seems to me to be superhuman strength, carries it on his back up a notched pole into the treehouse. Inside, every nook and cranny is crammed with bones from previous feasts—spiky fish skeletons, blockbuster pig jaws, the skulls of flying foxes and rats. The bones dangle even from hooks strung along the ceiling, near bundles of many-colored parrot and cassowary feathers. The Korowai believe that the décor signals hospitality and prosperity.

I meet Yakor, a tall, kindly eyed tribesman from a treehouse upriver, who squats by the fire with Khanduop, Bailom and Kilikili. Boas' mother is dead, and Khanduop, a fierce man, has married Yakor's sister. When the talk turns to khakhua meals they have enjoyed, Khanduop's eyes light up. He's dined on many khakhua, he says, and the taste is the most delicious of any creature he's ever eaten.

The next morning the porters depart for the river, carrying our remaining supplies. But before I leave, Khanduop wants to talk; his son and Kembaren translate. "Boas has told me he'll live in Yaniruma with his brother, coming back just for visits," he murmurs. Khanduop's gaze clouds. "The time of the true Korowai is coming to an end, and that makes me very sad."

Boas gives his father a wan smile and walks with me to the pirogue for the two-hour journey to Yaniruma, wearing his yellow bonnet as if it were a visa for the 21st century.

Three years earlier I had visited the Korubo, an isolated indigenous tribe in the Amazon, together with Sydney Possuelo, then director of Brazil's Department for Isolated Indians [SMITHSONIAN, April 2005]. This question of what to do with such peoples—whether to yank them into the present or leave them untouched in their jungles and traditions—had troubled Possuelo for decades. "I believe we should let them live in their own special worlds," he told me, "because once they go downriver to the settlements and see what is to them the wonders and magic of our lives, they never go back to live in a traditional way."

So it is with the Korowai. They have at most a generation left in their traditional culture—one that includes practices that admittedly strike us as abhorrent. Year by year the young men and women will drift to Yaniruma and other settlements until only aging clan members are left in the treehouses. And at that point Ginol's godly prophecy will reach its apocalyptic fulfillment, and thunder and earthquakes of a kind will destroy the old Korowai world forever.

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To be or not to be Shakespeare

Flower, c. 1820-40

Grafton, 1588

Sanders, 1603

Soest, c. 1667

While skeptics continue to question the authorship of his plays, an exhibition raises doubts about the authenticity of his portraits

BY DOUG STEWART

EVEN IF YOU'RE a regular visitor to London, it's probably never occurred to you to stop in to see William Shakespeare's original manuscripts at the British Museum or Library. That's just as well. There are no original manuscripts. Not so much as a couplet written in Shakespeare's own hand has been proven to exist. In fact, there's no hard evidence that Will Shakespeare of Stratford-upon-Avon (1564-1616), revered as the greatest author in the English language, could even write a complete sentence.

Is it any wonder that controversy swirls around the authorship of the 154 sonnets and some 37 plays credited to him? Skeptics have long belittled the notion of a barely educated small-town boy who moves to London to work as an actor and is suddenly writing masterpieces of unrivaled beauty and sophistication. Henry James wrote to a friend in 1903 that he was "haunted by the conviction that the divine William is the biggest and most successful fraud ever practised on a patient world." Other doubters have included Mark Twain, Walt Whitman, Sigmund Freud, Orson Welles and Sir John Gielgud.

At heart, the Shakespeare debate is about more than missing records. It's driven by an unquenchable need to slip past Shakespeare's verses and locate the real-life artist be-

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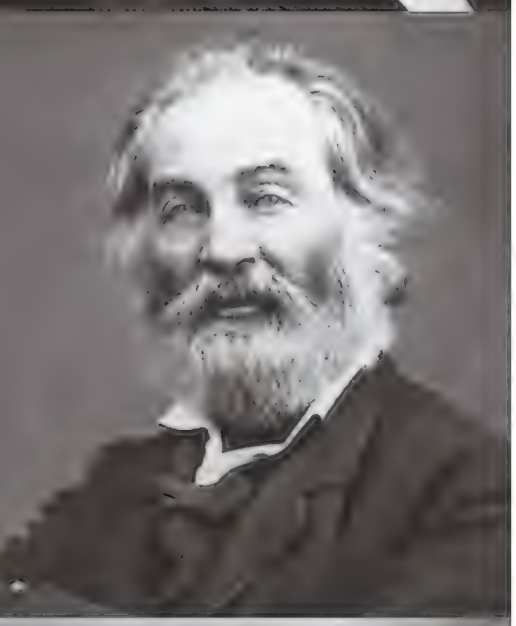
The Many Faces of William Shakespeare?

"Reader, looke Not on his Picture, but his Booke," advised Ben Jonson in his preface to the First Folio edition of Shakespeare's works. Of various portraits identified with Shakespeare, only the Chandos portrait (above) is believed painted from life. Opposite, from left: The so-called Flower portrait, once thought to have been done in Shakespeare's lifetime, was actually painted in the 19th century; an inscription identifies the subject of the Grafton portrait as the same age as Shakespeare—but the likeness is suspect; the sitter in the Sanders portrait appears too young to be the 39-year-old writer; the posthumous Soest portrait is based in part on the Chandos.



The Doubters

"He is a Brontosaur: nine bones and six hundred barrels of plaster of Paris."
—Mark Twain

"I think Oxford wrote Shakespeare. If you don't agree, there are some awfully funny coincidences to explain away."
—Orson Welles

"One of the 'wolfish earls' so plenteous in the plays themselves . . . might seem to be the true author of those amazing works."
—Walt Whitman

The man of Stratford "seems to have nothing at all to justify his claim, whereas Oxford has almost everything."
—Sigmund Freud

hind them, whoever he or she might be. Little is known about Dante or Chaucer either, but somehow that isn't as nettlesome. "If Shakespeare hadn't been metamorphosed into a god, nobody would think it was worth having an authorship controversy about him," says Jonathan Bate, a Shakespeare expert at the University of Warwick, not far from Stratford.

It's certainly curious that the creator of such vivid, recognizably human characters as Falstaff, Lear and Hamlet should himself remain as insubstantial as stage smoke. The most detailed description of the man left to us by someone who actually knew him, it seems, is a less-than-incisive sentence from his friend and rival, the playwright Ben Jonson: "He was, indeed, honest, and of an open and free nature." That covers a lot of ground. As for Shakespeare's appearance, none of his contemporaries bothered to describe it. Tall or short? Thin or chubby? It's anyone's guess.

An exhibition about the visual side of this quest—the desire to see William Shakespeare's face, literally—is on view through September 17 at the Yale Center for British Art in New Haven, Connecticut. "Searching for Shakespeare" brings together eight images of the Bard (six paintings, one engraving and one sculpted bust)—only one of which was likely done from life—along with rare theatrical artifacts and documents. Rendered by long-forgotten artists, each of the six painted portraits surfaced after the playwright's death, in some cases centuries later. "There's something about Shakespeare that connects with those big human issues—who we are, why we feel the way we do, love, jealousy, passion," says Tarnya Cooper, who curated the exhibition at London's National Portrait Gallery, where the portraits exhibit opened last March. "In looking for a portrait of Shakespeare, we want to see traces of those passions in the portrait's face."

UNFORTUNATELY, as a flesh-and-blood human being Will Shakespeare of Stratford remains stubbornly out of reach. He was born to an apparently illiterate glove maker and his wife early in the reign of Queen Elizabeth I. At 18, he married the pregnant Anne Hathaway, who was eight years his senior. By 21, he had fathered three children. He turns up in the documentary record next at age 28 in London—apparently without his family—working as an actor. He's later listed as a member of a prominent acting troupe, the Lord Chamberlain's Men, and later, the King's Men. His name appears on the title pages of plays printed for popular consumption beginning in his mid-30s. Records show he retired around 1613 and moved back to Stratford, where he died in relative obscurity three years later at 52. And that's about it.

The sketchy paper trail from Shakespeare's life hasn't stopped the publishing industry from issuing a stream of

Massachusetts freelancer **DOUG STEWART** *wrote about the destruction of Pompeii in the February 2006 issue of* SMITHSONIAN.

CORBIS; BETTMANN / CORBIS (2); CORBIS; P. 65 NATIONAL PORTRAIT GALLERY, LONDON (2); MASTER AND FELLOWS OF CORPUS CHRISTI COLLEGE, CAMBRIDGE; NATIONAL PORTRAIT GALLERY, LONDON (2)

biographies filled with phrases like "may have" and "could have." Last year in the *New York Times Book Review*, editor Rachel Donadio mused whether Stephen Greenblatt's 2005 biography of the Bard, *Will in the World*, should be on the fiction or the nonfiction bestseller list.

"There are documents from William Shakespeare's life that concern his career as an actor and theater manager and so on, but there's nothing that suggests a literary life," says Mark Anderson, author of *"Shakespeare" by Another Name*, an examination of the plays' authorship. "That's what's so damning about the documentary record. The greatest manhunt in literary history has turned up no manuscripts, no letters, no diaries." The only definitive examples of Shakespeare's handwriting are six signatures, all on legal documents. Of course, few letters or diaries of commoners from that time have survived.

Aristocratic, learned and well traveled, Edward de Vere, the 17th Earl of Oxford (above, in detail of a 1575 portrait), died at age 54 in 1604, before a number of Shakespeare's plays were written.

Doubters over the years have proposed some 60 candidates as the real Shakespeare, among them Sir Walter Ralegh, Christopher Marlowe and Queen Elizabeth herself. The popular favorite among skeptics of the 19th and early 20th centuries was Francis Bacon, philosopher and writer. Some Baconians maintained that secret codes sprinkled throughout Shakespeare's plays pointed to the works' true author. (For example, by counting the difference in total words in two passages from *Henry IV, Part 1*, multiplying that by the number of hyphenations, then using the result to move up or maybe down a page somewhere else, you can begin to extract hidden messages in the plays, such as "shak'st . . . spur . . . never . . . writ . . . a . . . word . . . of . . . them.") Other contenders were decidedly far-fetched—a long-dead member of Henry VIII's court; a cabal of Jesuits—but the very proliferation of theories demonstrated how deeply unsatisfying many people found the Stratford story to be. In recent decades, the debate has largely settled down to a dispute between two opposing camps. On one side are the mainstream defenders of the status quo, known as Stratfordians. The anti-Stratfordian movement, meanwhile, backed by books, Web sites and conferences, has coalesced mainly around a single candidate: Edward de Vere, the 17th Earl of Oxford (1550-1604).

Oxfordians, as they are known, dismiss Will of Stratford as a frontman for the ink-stained earl who used his name as a pseudonym. (More or less. Will's surname was often Shakspere but sometimes Shaxspere, Shagspere or Shaxberd, though variants on the spelling of names were hardly uncommon at the time.)

"Shakespeare the writer, whoever he was, was one of the most broadly educated authors in English literature," says Anderson, an avowed Oxfordian. The poet-playwright was steeped in the classics and drew on source texts that hadn't yet been translated into English. His working vocabulary

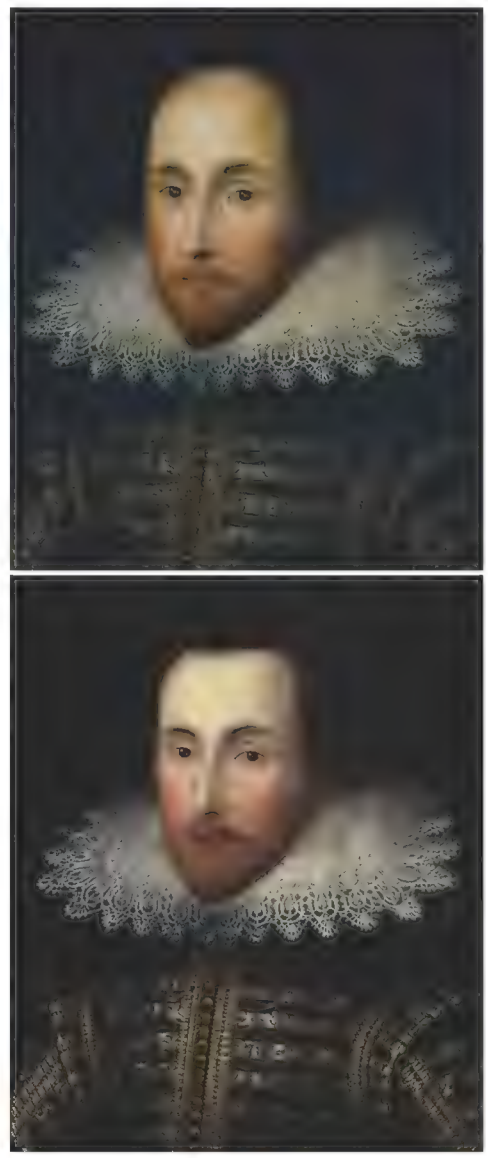
Other Contenders

From left: Francis Bacon, philosopher, statesman, scientist and lawyer (at age 17, in a 1578 portrait by English miniaturist Nicholas Hilliard) was considered a candidate because some of his philosophical interests appear in Shakespeare's writings. Christopher Marlowe (in an unauthenticated portrait by an unknown artist) was stabbed to death at age 29 in 1593, before many of the plays were written. As a member of the acting troupe the Lord Chamberlain's Men, Shakespeare would have performed many times at the court of Elizabeth I; some scholars have even speculated that she herself (above, in a c. 1585-90 portrait) penned the plays. Explorer and military commander Sir Walter Ralegh (as rendered by Nicholas Hilliard c. 1585) was an esteemed court poet.

of more than 17,000 words—twice that of John Milton's according to lexicons compiled for both men in the 19th century—includes nearly 3,200 original coinages. Could such erudition, Anderson asks, really come from a man with, at most, an English grammar-school education?

There is other circumstantial evidence against "the Stratford man," as Oxfordians condescendingly call Shakespeare. Neither his wife nor his daughter Judith, it appears, were sufficiently literate to write their own names. The man himself is not known to have traveled beyond southern England, yet his plays suggest a firsthand knowledge of the Continent—Italy especially. In Stratford he was known as a businessman and property owner with some connection to the theater, not as a writer. His death attracted no notice in London, and he was buried—beneath a marker that bore no name—in Stratford.

The glimpses of Shakespeare's character afforded by the few surviving legal documents from his life, moreover, don't square with the current popular notion of a wise and lofty-minded poet. He apparently sued over debts as small as two shillings. A London acquaintance once sought his arrest, along with that of some other men, "for fear of death." And in 1598, he was accused of hoarding grain in Stratford during a famine, prompting a furious neighbor to demand that he and his fellow profiteers be "hanged on gibbets at their own doors." Then there is his will (a centerpiece of the Yale exhibition), in which he bequeathed to his wife his "second best bed." As poet and essayist Ralph Waldo Emerson wrote in 1850, "Other admirable men have led lives in some sort of keeping with their thought, but this man in wide contrast."



In 1988, the Janssen portrait (top) was found to have been altered, before 1770, to create a more "Shakespearean" hairline. The c. 1610 work, now restored (above), may depict author Sir Thomas Overbury.

THE TWO PORTRAITS of Shakespeare that have been widely accepted as authentic have probably contributed to the doubts. The best-known—an image instantly recognizable today—is a posthumous engraving made by Martin Droeshout, a none-too-talented Dutch artist of the early 1600s. It appeared on the title page of the First Folio, the massive compilation of plays by Mr. William Shakespeare published by John Heminges and Henry Condell, fellow actors and longtime friends of the Bard, in 1623, seven years after his death (see "Folio, Where Art Thou?," p. 70). In Droeshout's anatomically awkward rendering, which he likely copied from a life portrait that no longer exists, the subject looks distant and slightly uncomfortable, as though he'd rather not be posing at all. The second generally accepted portrait, also posthumous, is a memorial bust (p. 71) in Stratford's Trinity Church, which many find even more disconcerting than Droeshout's engraving. Critic J. Dover Wilson likened the well-fed, vacant-looking man in the carving to "a self-satisfied pork-butcher." The two portraits, Wilson wrote in his 1932 biography *The Essential Shakespeare*, are "so obviously false images of the greatest poet of all time that the world turns from them in disgust." Wilson seems to have been overstating matters, for evidently both likenesses were acceptable to Shakespeare's own friends and family.

In the years following these two early efforts at depicting him, Shakespearean portraiture became something of a cottage industry. "New portraits turn up quite often," says curator Tarnya Cooper in London. "In the last three months, I've had three." So far, all have been deemed fabrications or portraits of someone else. Last year, a scientific examination revealed that one of the most familiar likenesses of the playwright, the Royal Shakespeare Company's so-called Flower portrait—once thought to have been done in the Bard's lifetime and to have perhaps been the source of the Droeshout engraving—was actually concocted in the 19th century. In 1988, the subject of another rendering, the Folger Shakespeare Library's Janssen portrait (left), inscribed with the date 1610, proved to be hiding a full head of hair; the subject's domelike forehead was a paint-over added in the 17th or 18th century.

Though Cooper can't affirm that any of the "Searching for Shakespeare" portraits were painted from life, she labels as "pretty high" the odds that a living, breathing William Shakespeare posed for the National Portrait Gallery's own Chandos portrait, which she calls "our *Mona Lisa*." The undated painting is attributed to an obscure English artist and possible bit actor of Shakespeare's day named John Taylor. A succession of owners since the mid-1600s have deemed it an authentic portrait of Shakespeare, and it was the first work the gallery acquired at its founding in London in 1856. The portrait's swarthy, somewhat lugubrious subject didn't look sufficiently "English" to a few of the Bard's early admirers, however. "Our author exhibits the complexion of a Jew, or rather of a chimney-sweeper in the jaundice," complained an 18th-century editor named George Steevens.

The search for an authentic image of Shakespeare, like the search for revelations about his life, is guided in part by what we hope to find: we hope he flirted with Queen Eliza-

FOLGER SHAKESPEARE LIBRARY (2)

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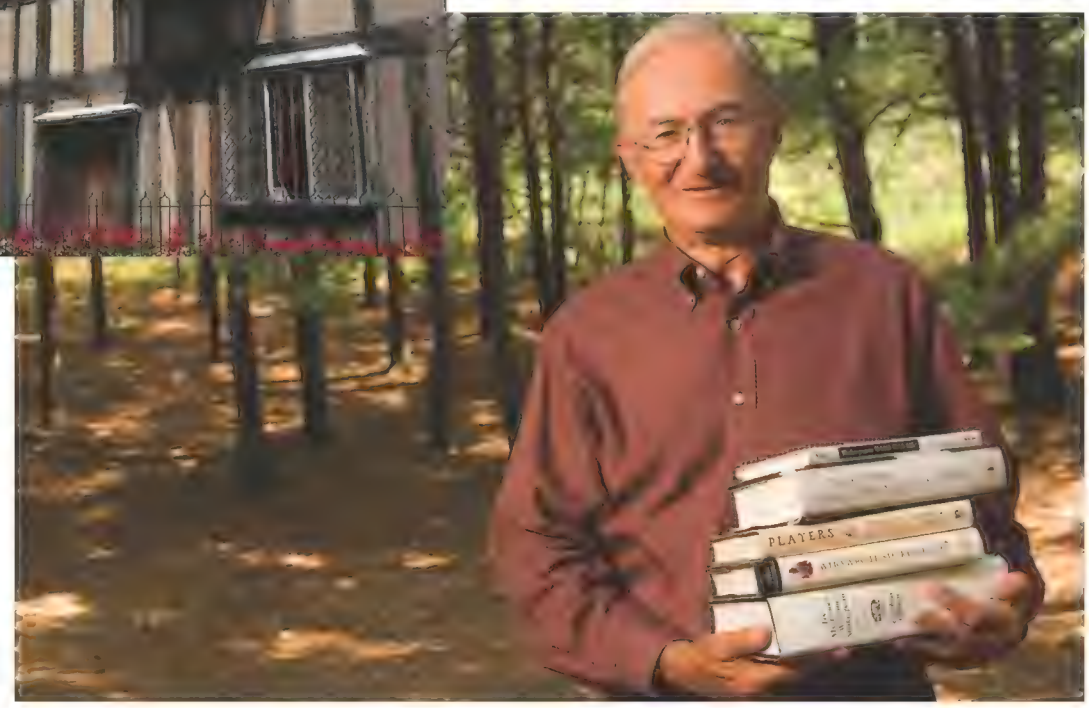
beth, but he probably didn't. We hope he didn't hoard grain, but he probably did. This may explain the popularity of two of the eight highlighted portraits in the exhibition. Both the Grafton portrait (1588) and the Sanders portrait (1603) depict sensuous young men, neither of whom has any substantial claim to being Shakespeare. For the frontispiece of *The Essential Shakespeare*, J. Dover Wilson chose the Grafton, confessing that he couldn't help but wish that "the unknown youth of the wonderful eyes and the oval Shelley-like face" was in fact the young poet. And literary critic Harold Bloom announced in *Vanity Fair* in 2001 that he preferred the "livelier" Sanders to traditional portraits.

Oxford's many enemies, however, described him variously as a whoring, hot-tempered bully, a dissolute spendthrift and a flatulent pederast. At 17, he used his sword to kill an under-cook in Burghley's household (supposedly in self-defense). And at 24, he abandoned his wife for the Continent for more than a year. As for his poetry, Oxford biographer Alan H. Nelson, emeritus professor of English at the University of California at Berkeley and a Stratfordian, ranks it "from absolutely dreadful to middling."

In his own time, at least, Oxford's poetry won praise. So did his skill as a playwright, though none of his dramas survive. Some modern-day advocates claim that it would have been unseemly for a high-ranking nobleman to write plays openly for the hugely popular, sometimes rowdy Elizabethan public theater. And, they say, playwrights who satirized the powerful too obviously could find themselves jailed or worse.

Richard Whalen, author of *Shakespeare—Who Was He?* (which answers its title's question as, unquestionably, the Earl of Oxford), allows that the earl's identity as the real Shakespeare had to have been known to a number of theater-world insiders, among them an accommodating Will. Nonetheless, Whalen argues, one needn't posit the existence of a grand conspiracy that concealed Oxford's role. "His authorship was probably an open secret," says Whalen, who, like his fellow Oxfordian Mark Anderson, is unaffiliated with a university. The powers that be could pretend they didn't know a nobleman was stooping to farce and, worse, critiquing his peers. As for the general public, he says, "They weren't all that interested in who wrote the plays they went to."



"What sets Shakespeare apart from his contemporaries," says Stratfordian Jonathan Bate (above, at Shakespeare's Stratford birthplace), "is the sheer range of his style and subject matter." "The Earl of Oxford's life fits the profile of someone you would expect to have written the works of Shakespeare," says Oxfordian Richard Whalen (at right).

But "Searching for Shakespeare" includes one portrait about which there is no doubt whatsoever: it is of Edward de Vere, the 17th Earl of Oxford. That he appears a more dashing and self-assured figure than any of the Shakespeares on display is not, of course, why Oxfordians find him the more plausible candidate—though it probably doesn't hurt. Fourteen years Shakespeare's senior, Oxford was an urbane, multilingual dandy, well educated, well traveled and well connected. At 12, when his father died, he was taken in by William Cecil, later Lord Burghley, who for more than 40 years was Queen Elizabeth's most trusted adviser. He became Oxford's father-in-law when Oxford, at 21, married Burghley's daughter, Anne Cecil. At court, he won attention as a jousting champion, clotheshorse and ladies' man. "The Queen's Majesty delighteth more in his personage and his dancing and his valiantness than any other," another young aristocrat, the future Earl of Shrewsbury, wrote of the 21-year-old earl.

Links between Oxford and Shakespeare are not hard to find. The oldest of Oxford's three daughters was once offered in marriage to the 3rd Earl of Southampton, to whom Shakespeare dedicated his two long narrative poems, "Venus and Adonis" and "The Rape of Lucrece." (He de-

CAROLYN DJANOGLY; RICHARD HOWARD

Allen Toussaint for the Louisiana Department of Culture, Recreation and Tourism

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Folio, Where Art Thou?

One man's quest to track down every copy on the planet

Given the absence of any original manuscripts in Shakespeare's handwriting, the First Folio is about as close to the Bard as you can get. After Shakespeare died in 1616, two actors from his company began collecting his plays, working from printed versions, transcriptions and their own memories. The result of their labors, published in 1623, may be the greatest rescue in English literature: of the 36 plays in the Folio, 18 appeared in print for the first time. Without the actors' efforts, *Macbeth*, *The Tempest*, *The Taming of the Shrew* and *Twelfth Night* might not exist.

This plain-looking bound volume originally sold for about £1; this past July, a copy fetched $5.2 million at auction. Because 17th-century printers made corrections on the fly and sometimes intermixed corrected and uncorrected pages, each copy is unique. And because scholars use these variants to pin down what Shakespeare actually wrote, tracking down all the Folios has become essential. While nobody is quite sure how many were originally printed—the current estimate is about 750—there is agreement about how many survive.

"There are now 230," says Anthony James West, a senior fellow at the University of London.

If West seems surprisingly precise, it's for good reason. Only four books have had worldwide censuses—the Gutenberg Bible, Audubon's *Birds of America* and Copernicus' *De Revolutionibus* are the other three—and the Folio's tally is by far the oldest and most ambitious. While lists of Folio owners were made in 1824 and 1902, West has expanded the task into a monumental project: examining the Folios and recording details of every page of every copy.

His work for the Oxford University Press series *The Shakespeare First Folio: The History of the Book* may qualify him as the most indefatigable pursuer of a single edition in literary history. Volume 1 charts the ups and downs—mostly ups—of what people have been willing to pay for a First Folio, and Volume 2 tracks the ownership of each one over the centuries. Two future volumes, to be published by Palgrave Macmillan, will identify the unique characteristics of each copy and include specialists' essays on Folio issues.

West (above) with the $5.2 million Folio. The title-page image is thought to be from a life portrait that no longer exists.

Although Folio owners are a varied lot—from a Microsoft billionaire to a bucolic Irish college—all seem to have welcomed West's quest. One even let him take a copy back to his hotel to examine it. West assures owners their privacy, if they wish it. "One owner wanted to be identified only by the continent he was on," he says, "and I honored that wish."

Though British by birth, West, age 75, earned an MBA at Harvard in 1958, then spent two decades as an international management consultant. But beneath the suit and tie beat the heart of a bibliophile. "My father was a letterpress printer," he says. "I was brought up around the smell of ink." (He also earned two degrees in English literature.) After enjoying some business success, West discovered that Shakespeare's Folio needed a dedicated chronicler. In 1989, at the age of 58, he returned to graduate school to become that person.

"I've nearly spent my life savings on this," he says a bit ruefully. He works from his home in the English countryside, but the effort has sent him crisscrossing five continents. West has found that Folios generally follow new wealth; these days the world's second-largest collection is at Meisei University in Japan.

Newly discovered Folios still turn up. In 2004, Anne Humphries, a homemaker near Manchester, was named the sole survivor of a relative she'd never heard of; among the estate was a Folio that executors listed as "presumed to be a facsimile." Not at all. West discovered another Folio in the public library of the Yorkshire mining town of Skipton; the book had been mislabeled and forgotten.

As long as Folios are misfiled in libraries and hiding with long-lost relatives, the count of 230 copies will inch upward. At least a dozen known copies remain untraced. "I have about 130 leads," West says, adding that some are "quite hot."

{ BY PAUL COLLINS }

clined.) Another daughter was married to one of the two earls to whom the First Folio was dedicated.

Oxford supporters find other evidence in the plays themselves. In *Hamlet* and *King Lear*, for example, they hear the voice of an aristocrat, not a commoner. "The plays demonstrate a keen, intimate knowledge of how people in a royal court or a government bureaucracy think and operate," says Whalen. "Yes, great writing is always a creative process, but a writer's best works are products of their own experiences. Think of Tolstoy, who wrote about what he knew best: his family, Russia, war. I would argue the Earl of Oxford's life fits the profile of someone you would expect to have written the works of Shakespeare."

Oxfordian Mark Anderson finds other clues in Shakespeare's settings, plots and characters. He discerns in *Hamlet*, for instance, elements drawn from Oxford's life. "Polonius is a caricature of Oxford's father-in-law, Lord Burghley, who was known to be rather prolix and tedious," he says. "Burghley, like Polonius, once sent spies to check up on his own son." Ophelia is Burghley's daughter, whom Oxford/Hamlet woos, and so on.

As persuasive as their case may be, even the most ardent Oxfordians must admit there isn't a scrap of real evidence tying their man to Shakespeare's work. And how to explain Ben Jonson's eulogy of the "Sweet Swan of Avon," in the First Folio? ". . . Soul of the Age! The applause, delight, the wonder of our Stage! . . . Thou art a Monument, without a tombe, / And art alive still, while thy Booke doth live, / And we have wits to read, and praise to give."

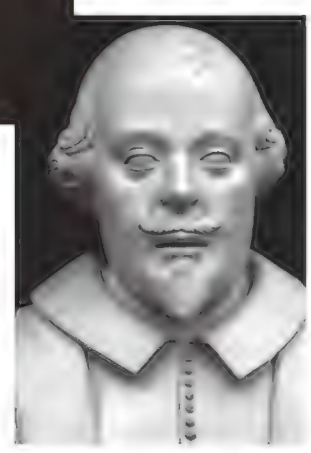
BY AND LARGE, orthodox Stratfordians—a group that includes the vast majority of historians and English professors with an interest in Shakespeare—dismiss Oxford's champions as wishful thinkers who ignore or mis-

CAROLYN DJANOGLY; ELIZABETAN CLUB OF YALE UNIVERSITY, GIFT ALEXANDER S. COCHRAN

read historical evidence. It's natural, they say, that we yearn for traces of our most revered writer—a signed love sonnet on parchment, at least, if not a complete first draft of *Macbeth*. But finding their absence suspicious, they say, reveals basic misunderstandings about life during the English Renaissance.

"In his own time, Shakespeare wasn't thought of as a universal genius," says Marjorie Garber, professor of English and visual studies at Harvard University and the author of several books on Shakespeare, including *Shakespeare After All* (2004). "Nobody was about to save a laundry list he wrote so they could sell it on eBay. It wasn't that kind of culture." Paper, typically handmade in France, was scarce and expensive; when it was no longer needed, it was reused—to line a baking dish, perhaps, or stiffen a book cover. Letter-writing and diary-keeping were unusual, especially for commoners. As for play manuscripts, Garber says, "Once they were set in type, there was certainly no reason to save them." Even in print, plays were considered something less than literature. When Thomas Bodley set up the Bodleian library at Oxford University in Shakespeare's time, she points out, he refused to include play texts. "These were considered trash, like pulp fiction."

One by one, mainstream scholars knock down the Oxfordians' debating points. No, Stratford wasn't an uncultured backwater; a lord mayor of London and an archbishop of Canterbury had both come from there. No, a Stratford grammar-school graduate wasn't akin to a seventh-grade dropout of today. The Greek and Latin classics echoed in the plays were a standard part of the grammar-school curriculum. Shakespeare may never have visited Italy, but neither he nor anyone else during the Renaissance ever set foot in ancient Greece or Rome either, and that did not rule out the Classical world as a popular setting for poetry and drama. And no, you didn't have to be a nobleman to write about kings and queens. Writers of every stripe did so—it's what the Elizabethan public demanded.



"He was not of an age, but for all time!" wrote Ben Jonson (above) of his friend Shakespeare (at right, in a detail of his c. 1620 memorial effigy).

"IN THE END, what sets Shakespeare apart from his contemporaries is the sheer range of his style and his subject matter," says the University of Warwick's Jonathan Bate. "He was great in comedy and tragedy and history. He could write about the court, and he could write about ordinary people." A play doesn't have to be autobiographical, Bate suggests, any more than a sonnet has to be confessional. "Shakespeare always kept himself well disguised. He didn't insert his own opinions, and he steered away from the topical controversies of the day. That's why it's so easy for directors and filmmakers today to make his plays contemporary. It's the key to his endurance."

Nor, Bate adds, is it necessary to believe that Shakespeare began writing masterpieces as soon as he picked up a quill. "There is good evidence that he started by rewriting the works of other dramatists. Lots of his early plays are either collaborative works, where he's a kind of junior partner working with more established dramatists, or they're reworkings of older plays." Even the mature plays like *Hamlet* and *King Lear*, Bate says, drew on existing works for their plots. "In his time, originality wasn't especially valued."

As for England not mourning his death, that's not surprising either. By 1616, Shakespeare was, after all, a middle-class retiree living far from London, and his plays were no longer the latest fashion. "In his own lifetime and for some time after, Shakespeare is certainly admired and respected, but he's not thought of as unique," says Bate. Which is why later writers felt justified in "improving" on him. British poet laureate John Dryden shortened *Troilus and Cressida* in the late 1600s by excising what he called "that heap of Rubbish, under which so many excellent Thoughts lay wholly bury'd." An unnamed critic in the following century scolded Shakespeare "for ignoring the ancients, for violating decorum by resorting to tragicomedy and supernatural characters, and for using puns and blank verse."

"The idea that he was a completely different order of genius from all his contemporaries only begins in the mid-18th century, with the British Empire taking off and literacy growing," says Bate. The apotheosis became official with actor David Garrick's lavish Shakespeare Jubilee, held in Stratford in 1769. For today's public, of course, Shakespeare is to literary genius what Mozart is to music and Leonardo to painting. The authorship debate, says Bate, is a natural consequence of a cult of Shakespeare now deeply rooted in our culture.

Harvard's Marjorie Garber takes an unusually tolerant view of the long-running dispute. "A lot of people, especially writers, prefer the mystery to an answer," she says. Any answer is going to be simply a human of a particular time and place. We regard Shakespeare today, she believes, the way his friend Ben Jonson did in his First Folio tribute—"He was not of an age, but for all time!"—and asks whether we really want to see him reduced to an ordinary mortal. "Many people prefer to keep the idea of a transcendent, universal Shakespeare," she says. Garber likes to cite a remark Charles Dickens made to a friend in 1847: "The life of Shakespeare is a fine mystery, and I tremble every day lest something should turn up."

NATIONAL PORTRAIT GALLERY, LONDON (2)

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Mountain lions are thought to be multiplying in the West and heading east. Can we learn to live with these beautiful, elusive creatures? **BY STEVE KEMPER**

COUGARS ON THE MOVE

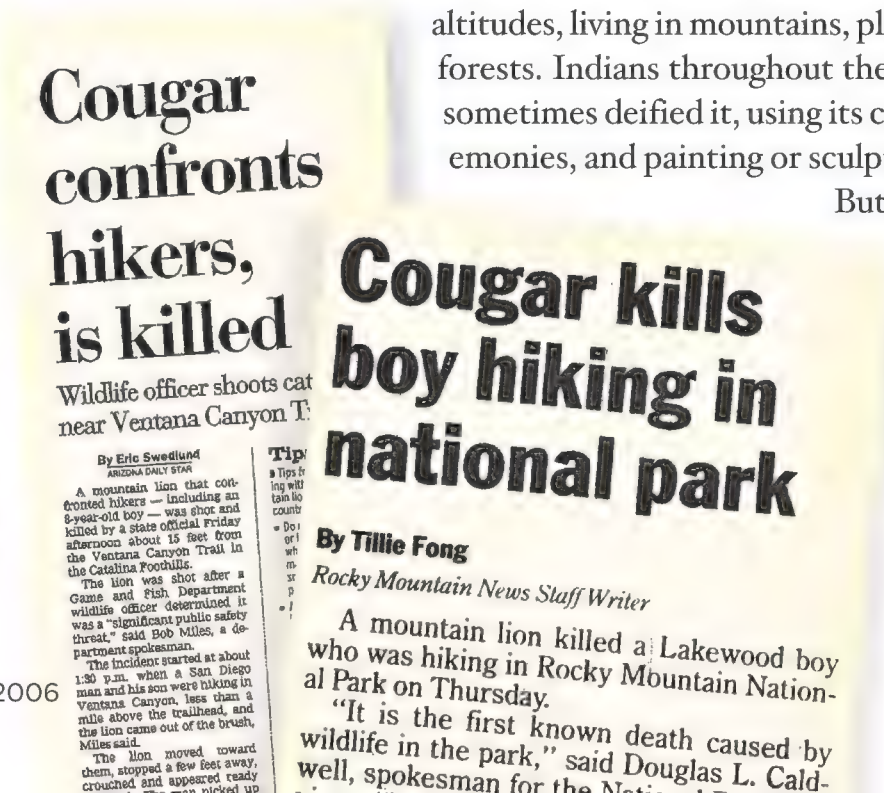
STANDING ON THE LIP of a steep cliff at about 8,000 feet on the Uncompahgre Plateau in western Colorado, Ken Logan rotates a telemetry antenna to pinpoint the radio signal of a female cougar designated F-7. Far below, aspens shimmer and ponderosa pines jut above the rest of the canopy. Logan, tanned and fit at 50, wants to tag F-7's cubs, which she has stashed in a jumble of rocks on the mountainside below. But she won't leave them, and Logan is wary. In 25 years of studying cougars, he and his team have had about 300 "encounters" and have been challenged six times. "And five of the six times," he says, "it was a mother with cubs. So what we don't want today is mom there with her cubs behind her."

Logan, who works for the Colorado Division of Wildlife, is at the beginning of a ten-year, $2 million study of mountain lions on 800 square miles of the Uncompahgre in Colorado. There's a lot at stake for cougars throughout the West, where beliefs about the cat are more often rooted in politics, emotion and guesswork than in hard facts. The animals are so elusive that no one knows for certain how many exist. "We're studying a phantom in the mountains," says Logan. The current guesstimate for the West's lion population is 30,000. Some scientists, including Logan, think there are more now than 50 years ago. Cougars are also drifting back into the Midwest after an absence of more than 100 years.

This speculative recovery delights some people and worries others. It has turned the cat into a symbol for competing interests. Are cougars destructive, overabundant predators that kill livestock and deer (robbing hunters of that opportunity), or splendid, overhunted icons that deserve protection? And how dangerous are they to people? Encounters have increased as more people spend leisure time in the cat's habitat, and as roads, houses and developments claim more cougar country. Fatal attacks in the United States and Canada are rare—21 in the past 115 years—but 11 have happened since 1990. Where should we draw the line between protecting them and protecting us?

This native American mountain lion—also called cougar, catamount, panther and puma—is the world's fourth largest cat after lions of the African variety, tigers and jaguars. It ranges more widely throughout the Americas than any mammal except human beings. From the Atlantic to the Pacific, from the bottom of South America to central Canada, *Puma concolor* roams across climates and altitudes, living in mountains, plains, deserts, swamps and forests. Indians throughout the Americas respected and sometimes deified it, using its claws, teeth and tail in ceremonies, and painting or sculpting its image.

But newer Americans reviled the animal as a sneaky "screamer" (in honor of its creepy caterwaul) and a livestock-eating varmint. Theodore Roosevelt, though a champion of conservation, shared his countrymen's con-



Cougar confronts hikers, is killed

Wildlife officer shoots cat near Ventana Canyon T

By Eric Swedlund
ARIZONA DAILY STAR

A mountain lion that confronted hikers — including an 8-year-old boy — was shot and killed by a state official Friday afternoon about 15 feet from the Ventana Canyon Trail in the Catalina Foothills.

The lion was shot after a Game and Fish Department wildlife officer determined it was a "significant public safety threat," said Bob Miles, a department spokesman.

The incident started at about 1:30 p.m. when a San Diego man and his son were hiking in Ventana Canyon, less than a mile above the trailhead, and the lion came out of the brush, Miles said.

The lion moved toward them, stopped a few feet away, crouched and appeared ready

Cougar kills boy hiking in national park

By Tillie Fong
Rocky Mountain News Staff Writer

A mountain lion killed a Lakewood boy who was hiking in Rocky Mountain National Park on Thursday.

"It is the first known death caused by wildlife in the park," said Douglas L. Caldwell, spokesman for the Nat

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As people and cougars encounter one another—the cats have killed 11 people in the United States in 16 years—communities grapple with how to respond. "[If we aren't careful,] it is possible to exterminate them," says biologist Ken Logan.

tempt for the mountain lion and shot it at every opportunity. He described it as "cowardly," "bloodthirsty" and "a beast of stealth and rapine."

Such a despicable creature clearly deserved annihilation, and by the beginning of the 20th century the mountain lion had vanished in the United States east of the Mississippi except for a remnant population in Florida (the endangered Florida panther, a subspecies). In the West, despite ranchers' ardent attempts at eradication, and government policies that included bounties, poisoning and salaried lion-killers, the cougar survived, saved by its evasiveness and ability to live in remote and rugged terrain.

Public opinion about the cat began improving in the 1960s and '70s. Pioneering puma researchers, most notably Maurice Hornocker, a wildlife biologist then at the University of Idaho at Moscow, began replacing ignorance with information, and most Western states reclassified the animal from a varmint that could be shot on sight to an income-producing big-game animal partially protected by seasons and quotas. (The exception is Texas, Logan's home state, where cougars—even cubs—can be killed year-round without limit.)

In 1990, reflecting changing attitudes, Californians voted to outlaw hunting cougars entirely. But most Western wildlife agencies have gone in the other direction in the past few decades, increasing the number that could be killed annually. In 1982, hunters in ten Western states killed 931 cougars, and by the early 2000s the number was topping 3,000. Some wildlife agencies and hunters argue that higher harvests prove that cougars are plentiful, which in turn justifies high quotas. Logan calls this "the sledgehammer approach" to management and notes that the bigger harvests might reflect an abundance of hunters rather than cougars: the number of permits surged between the late 1990s and early 2000s after Arizona, Colorado, Idaho, Nevada, New Mexico, Oregon, Utah and Washington all either expanded the season for lions, lowered the cost of licenses, raised bag limits—or all three. (Colorado and Montana have since lowered their quotas.) Technology also may be driving up the kill rate as hunters chase cougars with snowmobiles and all-terrain vehicles, while also using walky-talkies and hounds fitted with radio collars.

As Logan and Linda Sweanor (Logan's spouse and fellow biologist) comment in their authoritative 2001 book *Desert Puma*, "Puma-hunting management in most western states is a far cry from science." (The book describes the decade Logan and Sweanor spent in the New Mexico desert tagging and following 295 cougars, one of the most extensive studies ever done of the animals.) Because it's so hard for wildlife agencies to get accurate counts of cougars, Logan and Sweanor devised a conservative strategy for managing them by dividing a state into different zones: for sport hunting, for controlled killing in areas crowded with people or livestock, and for cougar refuges, which Logan calls "biological savings accounts." Many of the country's cougar experts, including Hornocker, have recommended that wildlife agencies adopt such zone management.

That hasn't happened. "Other political interests came to bear," Logan says dryly, referring mostly to ranchers and hunters. "One of my roles is to do the best science I can and present it in the best form I can. But none of it matters without the support of citizens who can persuade policymakers to implement it. At least the science is there now. I think policymakers and managers will go back to it, because management based on politics is going to fail."

In Horsefly Canyon in Colorado, a wild male cougar cub is briefly captured and outfitted with a transmitter that will broadcast his movements. An adult male cougar, researchers have been surprised to learn, can roam up to ten miles a day.

JOE LEWANDOWSKI / COLORADO DIVISION OF WILDLIFE

UP ON THE Uncompahgre, still frustrated by the stay-at-home mom F-7, Logan decides to try his luck elsewhere, at the nursery of F-2, another female who recently gave birth. He knows where her cubs are thanks to GPS data transmitted four times a day by satellite to her collar, where it is stored. He downloads the data every month and plots the lion's movements on a topographic map. A cluster of data points usually indicates a kill where a lion has spent a few days feeding, which Logan can investigate to get dietary information. When a female's cluster is dense and stretches over weeks, it usually indicates a nursery.

We drive for an hour on rutted dirt roads, occasionally passing new houses. "These people shouldn't be surprised if they wake up one day with a mountain lion on their porch," says Logan. At the edge of Horsefly Canyon, after rotating the telemetry antenna for 30 minutes, he determines that F-2 is resting about 300 yards from the

STEVE KEMPER *is the author of* Reinventing the Wheel: A Story of Genius, Innovation, and Grand Ambition.

Dietary flexibility helped cougars survive, but it can be a death sentence, especially if they develop a taste for lamb chops or Labrador retrievers.

nursery—a slim opening, but good enough. We bushwhack down to a creek bottom, then climb through heavy brush toward the nursery.

Thick bushes conceal the entrance to a dry, tent-shaped den, ten feet deep, formed by two massive rocks leaning against each other. Logan puts on a headlamp and crawls in. "Got 'em!" he shouts. "She chose a great spot." I'm behind him with a burlap bag, into which he places three squirming cubs, a typical litter. Their camouflage of dark stripes and spots will eventually give way to the cougar's characteristic rich auburn.

Logan and a research associate, Jim Bauer, a tall, laconic South Dakotan in a white cowboy hat, set up a makeshift lab out of gear from their 40-pound packs. The cubs spit, growl and flash their small fangs—predators in training. When Bauer lifts the first one, it defecates. "We want that!" says Logan; later he will collect the cub's DNA from the scat as part of an ongoing effort to trace family relationships among the cougars here. There are two females and a male, soon dubbed F-9, F-10 and M-11. Just over 4 weeks old, they're the size of small house cats and weigh about five pounds apiece. An adult female in this region weighs about 80 to 100 pounds. A male can reach 120 to 160 pounds and a length of up to eight feet, including three feet of tail.

Cougars are so stealthy and seldom seen that no one has a fix on how many there are in the wild. "We're studying a phantom in the mountains," says Logan (trying to pick up a signal from a radio-collared cougar along Colorado's Uncompahgre Plateau).

Logan slips an expandable radio collar with a small antenna onto each cub and punches a plug of tissue from their ears for genotyping, which makes the cubs wriggle and growl. "I hate this part," says Logan. Into the punch hole goes a numbered tag longer than the ear itself. "These cats could end up anywhere," says Logan, "so we want a tag that's visible to anyone who might harvest one of them." He tattoos a number in green ink inside the other ear. Tracking these animals will supply Logan with crucial data about their diet, habits, travels, battles, matings and fates.

A male puma's territory can cover 100 to 150 square miles. He prowls it constantly, marking it and advertising his virility with "scrapes"—small piles of dirt and debris scratched up by the back paws and topped with urine or feces. Logan points out several scrapes during our rambles on the Uncompahgre. He has seen females in heat stride back and forth near them, caterwauling. "They're solitary, isolated animals," says Logan, "so they have to find each other." Once they do, they may mate dozens of times a day for several days.

That concludes the male's contribution to family life. A female typically bears a litter every two years. After nursing for 6 to 12 weeks, the cubs start following mom to her kills. She supplies the meat for a few months until the cubs learn to ambush dinner. In South America the menu includes peccaries, monkeys, anteaters, bats and guanacos. North American cougars prefer deer, though they're strong enough to take elk and moose. Hornocker has established that a puma can leap onto an 800-pound elk, grab its muzzle with both forelegs and break its neck. "One of the greatest feats in the natural world," he calls it. Cougars will also eat skunks, rabbits, rodents, porcupines, raccoons and bighorn sheep. Hornocker has seen young lions snacking on grasshoppers. This dietary flexibility probably helped cougars survive over millennia, but nowadays can be a death sentence, especially if they develop a taste for lamb chops or Labrador retrievers.

F-2's youngsters might stick around for up to 18 months before heading into solitude. A young male might then fight an older male for his territory or roam until he finds unclaimed country, which could take a while—one cat tagged in the Black Hills of South Dakota was killed by a train in Oklahoma, 660 miles away. Though captive lions have lived up to 18 years, odds are strong that one or perhaps two of F-2's cubs won't reach adulthood, and none of them are

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likely to reach double digits. Aside from hunters, the biggest danger cougars face is males of their species, which sometimes kill other lions over food, females and territory. They will also kill cubs and juveniles to push a mother back into estrus for mating.

THE NEXT MORNING we rendezvous with Bruce Nay, a spry 57-year-old hunting guide from Norwood, Colorado, who sometimes volunteers himself and his lion hounds for Logan's research. He has a Western twang and scraggly hair covered by a camouflage cap. Driving to the Uncompahgre in his pickup, Nay tells me that trophy hunters have been hiring him and his hounds for more than 40 years. He has killed only one cougar for sport, a big male 21 years ago. It stands stuffed in his house. "Don't want another one," he says. "No need."

Growing up in southern Utah, he captured lions for money. After his dogs treed one, he would climb with a catch-pole and pull the cat into a 50-gallon drum. He sold the animals to a man who ran canned hunts, releasing the cougar from a cage as a client approached with dogs. The lion would tree quickly for an easy shot. "Illegal now, and should be," Nay says as we jounce along a dirt road in the Uncompahgre National Forest. "I love the dogs and love the lions," he adds. Helping hunters find and kill lions "is the way I make my living, but I'd just as soon they lived."

"I feel like we're the human guinea pigs," says Linda Ingo (with husband, Ed Ingo, on their Colorado ranch). Their spread borders an area where cougar hunting is prohibited because of Logan's research on the animals. They're concerned the big cats may proliferate, posing a threat to livestock—and people.

Chasing cougars across rims and ledges, he has seen them go places no dog could follow. He once found a 10-month-old cub killed by a chest puncture. Tracks told Nay a clear story: the inexperienced cub, attempting to ambush a buck, had impaled itself on the deer's horns. The buck's tracks bounded off. Before following them, "I could see the mother's tracks walking all around that kit," says Nay. "Then she went down half a mile and killed that deer and just clawed it all over. Never ate it."

Nay says many local guides and hunters oppose Logan's project, especially because Logan convinced Colorado's wildlife officials to institute a five-year ban on hunting cougars in the study area. But Nay supports the research because accurate information could help preserve lion hunting in Colorado. He says cats have gotten more scarce on the Uncompahgre, and he blames weekend hunters. "They will kill anything they find, including females," he says. "When you kill females, you're killing your factories." (Of the 319 lions killed by hunters in Colorado in 2004, some 45 percent were female.) Nay says he won't release his dogs on a female—he claims he can tell the sex by the size and shape of tracks—but some hunters unleash their hounds even on a female with cubs, doubling the offense against the future, since orphaned cubs seldom survive. "Some people," he says, "are so goddamned narrow-minded they can see through a keyhole with both eyes."

Today he hopes to help Logan collar F-7's litter, but once again her radio signal stays glued to the nursery. Logan has decided to apply some pressure by approaching the nursery, noisily, from above. "That way she'll have to come uphill to get us," says Logan. "But she'll probably either run off or hunker down." Time and again we climb and edge toward the nursery across ledges and dicey rock slides, but she doesn't budge. In late afternoon, Nay, eager for action, volunteers to enter the nursery by himself, which Logan vetoes.

"You're getting a pretty good idea of what we go through to get cub estimates and why we don't have much data," says Logan. In *Desert Puma*, he and Sweanor write, "Field ecologists normally 'observe' pumas by their tracks, beds, nurseries, playgrounds, droppings and scraps of prey"—that is, not by actually seeing the animals themselves. Logan's assistant, Tucker Murphy, has spent six months with cougar researchers, wearing out two pairs of boots, first in Yellowstone National Park and now here, but has caught only two glimpses of the creatures.

"You generally see them for just a second or two before they fade away," says Logan. "So many times when you're glassing [with binoculars] for them, you know they're right there because of the radio signal, and if you're lucky, you might see that black pompom on the tail twitch. And then you can put the whole cat together, with those big amber

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Biologists expect cougars to keep drifting east, drawn by abundant deer and unclaimed territory.

eyes staring straight at you. It's been watching you the whole time, but you couldn't make it out."

ERNIE ETCHART, his brother, George, and his father, Martin, run 3,500 ewes and up to 5,000 lambs on 12,000 acres, part of which is in Logan's study area. In 1985 a cougar killed 27 of their sheep in two nights. In 2000 another killed 10. Still, Etchart says, "there's a place for lions here." Etchart considers bears a bigger problem than cougars, not to mention coyotes and foxes. He uses guard dogs to discourage predators, which take about 5 percent of his sheep every year. But he also thinks the cougar population needs to be kept under control for ranching to stay viable here. Not a hunter himself, he nevertheless worries that as Colorado's human population becomes less rural, voters might outlaw lion hunting, which he thinks controls their numbers. "Good science sure beats the emotionalism behind the anti-hunting, anti-kill approach to lions," he says, explaining why he supports Logan's work.

Linda Ingo and her husband, Ed, run 400 head of cattle on 4,700 acres near Ridgway, Colorado. They haven't seen a cougar on their property since the early 1980s, and they don't have evidence that the ranch has lost cattle to lions. But she worries that cougars could take calves from their herd, or, worse, stalk people on their land. More cougars, due to the five-year ban on hunting them here, could also mean fewer deer and elk, resulting in fewer hunters paying to use the ranch. To her and her husband, the five-year ban on hunting sounds like a recipe for disaster. "To come in here and increase mountain lions is irresponsible," she says. "I feel like we're the human guinea pigs."

Ingo's fears are understandable, but they might be exaggerated. John Kane, who worked for the Wildlife Services program within the U.S. Department of Agriculture (before he died this year), was responsible for tracking down and shooting coyotes, bears, bobcats and pumas that killed livestock in part of western Colorado. He had to relocate only one problem cougar in the past two years. Logan's colleague Jerry Apker, a carnivore management specialist with Colorado's Department of Wildlife, says cougars "aren't even on the register compared to black bears" when it comes to hassling livestock. And as for human interactions: "Over the last 20 years we've had far more maulings and people injured by black bears than by mountain lions, but mountain lions get so much more attention."

Similar reports of relatively rare cougar encounters with humans come from other states. Starting in 2000, Logan and a team of researchers studied Cuyamaca Rancho State Park in San Diego County. Lions live in and near the park, and in 1994 one of them killed a lone female bird-watcher, Iris Kenna, 56. At the time of the study, about 500,000 people a year were visiting the park. Over two and a half years Logan's team collared ten adult cougars and traced their intersections with people. "The lions tried to avoid humans," says Logan. They steered clear of trails and park facilities during the day. Four lions did kill livestock outside the park, and were shot.

Ernie Etchart (on his Colorado sheep farm) says he doesn't hold a grudge against the bears, foxes, coyotes and cougars that take about 5 percent of his sheep every year. He says his guard dogs keep the losses down: "As long as ranchers have some way of protecting their livestock, I think we'll be OK."

Seth Riley, 39, has found similar behavior among eight collared lions in the busy suburbs between northern Los Angeles and the Los Padres National Forest. "No one ever sees the lions," says Riley, a wildlife ecologist at the Santa Monica Mountains National Recreation Area. "We don't even see them and we're tracking them. That's good, because it indicates that lions can occupy the same broad areas as humans—though if the habitat keeps disappearing, there's not going to be enough."

An estimated 4,000 to 6,000 cougars live in Califor-

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nia. Between 1996 and 2003 there were no attacks in that state. That streak ended horribly in January 2004 when a cougar killed 35-year-old Mark Reynolds as he repaired his bicycle chain in Orange County's Whiting Ranch Wilderness Park. A few hours later, the same cougar ambushed Anne Hjelle on the same trail, slamming her from her mountain bike and grabbing her head and face with its teeth. As the cougar began dragging her into the bushes, her riding partner, Debi Nicholls, grabbed Hjelle's leg in a tug of war for her friend's life. Nicholls' screams drew five other bikers, who finally drove off the lion with rocks. When it returned later for Reynolds' body, law enforcement officers shot and killed it.

Hjelle's face was badly torn. Now 33, she has had five reconstructive surgeries. But she says she feels no anger toward the lion that mutilated her or toward cougars in general. "They're gorgeous," she says. "I bought a painting of one for my house." She even bikes the same trails. "I still don't consider them a big threat to humans," she says. "It was unusual behavior. But I do think it will continue to happen."

While some view cougars as icons needing more protection, others see them as overabundant predators that kill deer, thus depriving human hunters of game (the mule deer above escaped). Yet research in New Mexico shows that deer flourish when cougars are active, unless there's a drought.

Cougars that attack humans don't fit a neat profile. A lion might be desperate because it's old, sick or orphaned. Logan thinks lions sometimes mistake a biker or runner for a deer. Genetics may play a role too. Big cat expert Hornocker suspects that some cougars are prone to stay invisible, while others are naturally curious or aggressive. A young male jumped Reynolds and Hjelle, and another mauled a hiker named Shannon Parker six months later in Sequoia National Forest in central California; they may have been transients passing through unfamiliar territory.

Scientists suspect that young transient males account for the return of cougars to the middle of the country, where they've been confirmed in Oklahoma, Kansas, Nebraska, North Dakota, Minnesota, Iowa, Illinois, Missouri and Arkansas. (South Dakota has had a breeding population of cougars for years.) Hornocker and other biologists expect cougars to keep drifting east, drawn by abundant deer and unclaimed territory.

Clay Nielsen, a wildlife ecologist at Southern Illinois University at Carbondale, has started mapping potential cougar habitat to help wildlife agencies predict where the cats might colonize. So far, he says, the scattered bachelors lack mates. A few people contend that cougars never disappeared east of the Mississippi, but, says Nielsen, with the exception of South Dakota, "there are no wildlife biologists who think we have breeding pairs in the Midwest." Still, says Hornocker, it's just a matter of time.

AFTER THREE FRUITLESS DAYS of playing cat-and-biologist with F-7 on the Colorado mountainside, Logan changes tactics. He positions a loudspeaker a quarter-mile from the nursery and serenades F-7 for two hours, first with a recording of a bleating fawn, then a distressed fawn, and finally a distraught hare. The idea is to entice F-7 from the nursery with the prospect of an easy meal. She doesn't bite.

The next morning, day five of Logan's quest for F-7's cubs, John Kane meets us with four hounds—three redbones and a black-and-tan. They poke their heads through portholes in their crates, moaning and shimmying at the prospect of a lion hunt.

Today Logan is counting on the old antagonism between canines and felines to dislodge F-7. The excited dogs jerk us up the cliff, tangling their leashes in the thick underbrush and occasionally baying at F-7's scent. Soon her radio signal is so strong that we know she's very near, probably within 30 feet, somewhere in the rocks and bushes just below us. "Use all your senses," yells Logan.

And then the radio signal suddenly moves, according to the telemetry antenna, coming from farther downslope and to our left. F-7 has somehow crept away right under our noses. "I never even saw a bush move," says Kane. Minutes later Jim Bauer locates the cubs in a rocky crevice. Two females. He and Logan set up their lab on the steep slope and spend an hour processing F-12 and F-13. Logan is elated. "Maybe I'll take the weekend off," he says. "Or maybe I'll just come up tomorrow and check the signal on those cubs."

W. PERRY CONWAY / CORBIS

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Was she a scheming stepmother or a strong and effective ruler? History's view of the pharaoh **Hatshepsut** has been revised

BY ELIZABETH B. WILSON

The Queen Who Would Be King

It was a hot, dusty day in early 1927, and Herbert Winlock was staring at a scene of brutal destruction that had all the hallmarks of a vicious personal attack. Signs of desecration were everywhere; eyes had been gouged out, heads lopped off, the cobra-like symbol of royalty hacked from foreheads. Winlock, head of the Metropolitan Museum of Art's archaeological team in Egypt, had unearthed a pit in the great temple complex at Deir el-Bahri, across the Nile from the ancient sites of Thebes and Karnak. In the pit were smashed statues of a pharaoh—pieces "from the size of a fingertip," Winlock noted, "to others weighing a ton or more." The images had suffered "almost every conceivable indignity," he wrote, as the violators vented "their spite on the [pharaoh's] brilliantly chiseled, smiling features." To the ancient Egyptians, pharaohs were gods. What could this one have done to warrant such blasphemy? In the opinion of Winlock, and other Egyptologists of his generation, plenty.

The statues were those of Hatshepsut, the sixth pharaoh of the 18th dynasty, one of the few—and by far the most successful—females to rule Egypt as pharaoh. Evidence of her remarkable reign (c. 1479-1458 B.C.) did not begin to emerge until the 19th century. But by Winlock's day, historians had crafted the few known facts of her life into a soap opera of deceit, lust and revenge.

Although her long rule had been a time of peace and prosperity, filled with magnificent art and a number of

The images had suffered "almost every conceivable indignity," wrote Egyptologist Herbert Winlock (above c. 1925 at Thebes) of statues he unearthed of the female pharaoh Hatshepsut. Numerous colossal statues of the pharaoh once adorned the terraces of her temple at Deir el-Bahri. In the one opposite (detail), Hatshepsut is depicted wearing the tall white crown of Upper Egypt.

METROPOLITAN MUSEUM OF ART, NEW YORK; P. 81 METROPOLITAN MUSEUM OF ART, ROGERS FUND

With its innovative colonnaded design, Hatshepsut's memorial temple (above, in early 2006) is considered one of the great architectural achievements of the ancient world. Upon the premature death of her husband, Thutmose II, Hatshepsut became regent for her young stepson, Thutmose III (below).

ambitious building projects (the greatest of which was her mortuary, or memorial, temple at Deir el-Bahri), Hatshepsut's methods of acquiring and holding onto power suggested a darker side to her reign and character. The widowed queen of the pharaoh Thutmose II, she had, according to custom, been made regent after his death in c. 1479 B.C. to rule for her young stepson, Thutmose III, until he came of age. Within a few years, however, she proclaimed herself pharaoh, thereby becoming, in the words of Winlock's colleague at the Metropolitan, William C. Hayes, the "vilest type of usurper." Disconcerting to some scholars, too, was her insistence on being portrayed as male, with bulging muscles and the traditional pharaonic false beard—variously interpreted by those historians as an act of outrageous deception, deviant behavior or both. Many early Egyptologists also concluded that Hatshepsut's chief minister, Senenmut, must have been her lover as well as a co-conspirator in her climb to power—the so-called evil genius behind what they viewed as her devious politics.

Upon Hatshepsut's death in c. 1458 B.C., her stepson, then likely still in his early 20s, finally ascended to the throne. By that time, according to Hayes, Thutmose III had developed "a loathing for Hatshepsut . . . her name and her very memory which practically beggars description." The destruction of her monuments, carried out with such apparent fury, was almost universally interpreted as an act of long-awaited and bitter revenge on the part of Thutmose III, who, Winlock wrote, "could scarcely wait to take the vengeance on her dead that he had not dared in life."

"Of course, it made a wonderful story," says Renée Dreyfus, curator of ancient art and interpretation at the Fine Arts Museums of San Francisco. "And this is what we all read when we were growing up. But so much of what was written about Hatshepsut, I think, had to do with who the archaeologists were . . . gentlemen scholars of a certain generation."

A new exhibition, "Hatshepsut: From Queen to Pharaoh"—co-curated by Dreyfus and fellow scholars Cathleen Keller, professor of Near Eastern Studies at the University of California at Berkeley, and Catharine Roehrig, curator of Egyptian art at the Metropolitan—aims to set the record straight. The show, which began a national tour at the Fine Arts Museums of San Francisco's de Young Museum last fall and continued on to the Metropolitan Museum in New York City, is currently on view through Decem-

JOSE FUSTE RAGA / CORBIS; GEORGE B. JOHNSON / NATIONAL MUSUEM IN WARSAW, GEHEIMNISVOLLE KONIGIN HATSCHEPSUT

ber 31 at the Kimbell Art Museum in Fort Worth, Texas.

The first major exhibition devoted to Hatshepsut, the show brings together some 300 objects from the tombs, temples, palaces and private lives of the ruler and her contemporaries. Ranging from colossal sphinxes and stone stelae to cosmetic containers and elaborate gold jewelry, these objects dazzlingly confirm something not even Hatshepsut's detractors have denied—that her reign set new standards of craftsmanship, taste and luxurious living, in both life and death.

Perhaps more important, the exhibition and its accompanying 340-page catalog also bring together a wealth of recent archaeological scholarship that contradicts many long-held beliefs about this much-maligned pharaoh and affirms her place in history as a strong, capable and largely beneficent ruler, whose path to power may have had more to do with political necessity than personal ambition.

HATSHEPSUT was born at the dawn of a glorious age of Egyptian imperial power and prosperity, rightly called the New Kingdom. Her father, King Thutmose I, was a charismatic leader of legendary military exploits. Hatshepsut, scholars surmise, may have been born about the time of his coronation, c. 1504 B.C., and so would still have been a toddler when he famously sailed home to Thebes with the naked body of a Nubian chieftain dangling from the prow of his ship—a warning to all who would threaten his empire.

Hatshepsut seems to have idolized her father (she would eventually have him reburied in the tomb she was having built for herself) and would claim that soon after her birth he had named her successor to his throne, an act that scholars feel would have been highly unlikely. There had been only two—possibly three—female pharaohs in the previous 1,500 years, and each had ascended to the throne only when there was no suitable male successor available. (Cleopatra would rule some 14 centuries later.)

Normally, the pharaonic line passed from father to son—preferably the son of the queen, but if there were no such offspring, to the son of one of the pharaoh's "secondary," or "harem," wives. In addition to Hatshepsut—and another younger daughter who apparently died in childhood—it's believed that Thutmose I fathered two sons with Queen Ahmes, both of whom predeceased him. Thus the son of a secondary wife, Mutnofret, was crowned Thutmose II. In short order (and probably to bolster the royal bloodlines of this "harem child"), young Thutmose II was married to his half sister Hatshepsut, making her Queen of Egypt at about age 12.

New Yorker **ELIZABETH B. WILSON** *has written about culture and the arts for such publications as* ARTnews *and* Art & Antiques.

The arts flourished under Hatshepsut's reign, sparking a renaissance that influenced Egyptian art for more than a millennium. From top: gold collar with falcon-head terminals; gold vulture breastplate; one-handled glass and enamel jug; four seal amulets inscribed with Thutmose III's throne name; red-slip ceramic hedgehog vase; gold sandals.

METROPOLITAN MUSEUM OF ART, FLETCHER FUND (2); BROOKLYN MUSEUM; METROPOLITAN MUSEUM OF ART, THEODORE M. DAVIS COLLECTION (4); VISITORS OF THE ASHMOLEAN MUSEUM, OXFORD, GIFT OF EGYPT EXPLORATION FUND; METROPOLITAN MUSEUM OF ART, FLETCHER FUND

Historians have generally described Thutmose II as frail and ineffectual—just the sort of person a supposedly shrewish Hatshepsut could push around. Public monuments, however, depict a dutiful Hatshepsut standing appropriately behind her husband. But while she bore her husband a daughter, Neferure (her only known child), Hatshepsut failed in the more important duty of producing a son. So when Thutmose II died young (c. 1479)—possibly still in his 20s—the throne went, yet again, to a "harem child." Duly named Thutmose III, this child was destined to become one of the great warrior kings of Egypt. But at the time of his father's death, he was likely an infant—a "hawk . . . still in the nest"—and deemed too young to rule.

In such cases, it was the accepted New Kingdom practice for widowed queens to act as regents, handling the affairs of government until their sons—in this case, stepson/nephew—came of age, and Hatshepsut (more or less automatically, it seems) got the assignment. "I think it would have been pretty much the norm for Hatshepsut to step in," says Peter Dorman, an Egyptologist at the University of Chicago and a contributor to the exhibition catalog. "But it's also quite clear that Thutmose III was recognized as king from the very start."

Monuments of the time show Thutmose III—still a child, but portrayed in the conventional manner as an adult king—performing his pharaonic duties, while Hatshepsut, dressed as queen, stands demurely off to one side. By the seventh year of her regency, however (and it may have been much earlier), the formerly slim, graceful queen appears as a full-blown, flail-and-crook-wielding king, with the broad, bare chest of a man and the pharaonic false beard.

"My command stands firm like the mountains," declared an inscription on a monument dedicated to Hatshepsut (above, left, as female, with pharaonic head cloth, and above, right, in a devotional attitude as male, with a kilt and pharaonic false beard).

But why? To Egyptologists of an earlier generation, Hatshepsut's elevation to godlike status was an act of naked ambition. ("It was not long," Hayes wrote, "before this vain, ambitious, and unscrupulous woman showed . . . her true colors.") But more recent scholarship suggests that a political crisis, such as a threat from a competing branch of the royal family, obliged Hatshepsut to become pharaoh. Far from stealing the throne, says the Metropolitan's Roehrig, "Hatshepsut may have had to declare herself king to protect the kingship for her stepson."

It's an interpretation that seems to be supported by Hatshepsut's treatment of Thutmose III during her reign. "He wasn't under house arrest for those 20-odd years," says Roehrig. "He was learning how to be a very good soldier." And it's not as if Hatshepsut could have stepped down when her stepson came of age. "Once you took on the attributes of kingship," explains Dreyfus, "that was it. You were a god. It's not queen for a day, it's king for all time."

Hatshepsut probably knew her position was tenuous—both by virtue of her sex and the unconventional way she had gained the throne—and therefore appears to have done what canny leaders have often done in times of crisis: she reinvented herself. The most obvious form this took was having herself portrayed as a male pharaoh. As to why, "No one really knows," says Dorman. But he believes it may have been motivated by the presence of a male co-ruler—a circumstance with which no previous female ruler had ever contended.

"She was not pretending to be a man! She was not cross-dressing!" says exhibition co-curator Cathleen Keller, pointing out that inscriptions on Hatshepsut's statues almost always contain some indication of her true gender—a title, such as "Daughter of Re," or feminine word endings, resulting in such grammatical conundrums as "His Majesty, Herself."

Hatshepsut also took a new name, Maatkare, sometimes translated as Truth (*maat*) is the Soul (*ka*) of the Sun God (*Re*). The key word here is maat—the ancient Egyptian expression for order and justice as established by the gods. Maintaining and perpetuating maat to ensure the prosperity and stability of the country required a legitimate pharaoh who could speak—as only pharaohs could—directly with the gods. By calling herself Maatkare, Hatshepsut was likely reassuring her people that they had a legitimate ruler on the throne.

One important way pharaohs affirmed maat was by creating monuments, and Hatshepsut's building projects were among the most ambitious of any pharaoh's. She began with the erection of two 100-foot-tall obelisks at the great temple complex at Karnak. Reliefs commemorating the event show the pair, each weighing about 450 tons, being towed along the Nile by 27 ships manned by 850 oarsmen. Dedicated to the sun god Re, they were sheathed in shimmering electrum, a combination of gold and silver.

Hatshepsut carried out her public works program across

RIJKSMUSEUM VAN OUDHEDEN, LEIDEN; METROPOLITAN MUSEUM OF ART, ROGERS FUND; P. 85 METROPOLITAN MUSEUM OF ART

"To look upon her was more beautiful than anything; her splendor and her form were divine," read an inscription on one of the many images commemorating Hatshepsut's rule. The head of one of her desecrated statues (above) was reassembled from fragments discovered in 1928. The dark square on her forehead is the remnant of the hacked-off *uraeus*, or symbol of royalty.

the empire, but it was concentrated in the area around Thebes, the dynastic and theological center of the Thutmoside dynasty, where she built a network of imposing processional roadways and sanctuaries. At Deir el-Bahri, just across the Nile from Thebes, she erected her magnum opus—an immense memorial temple, used for special religious rites connected to the cult that would guarantee Hatshepsut perpetual life after death.

Dramatically sited at the base of towering limestone cliffs, the temple, which is regarded as one of the architectural wonders of the ancient world, is approached through a series of terraced colonnades and courtyards that appear to ascend up the very side of the mountain. Despite the enormous scale of the complex—roughly the length of two and a half football fields—its overall impression is one of lightness and grace, unlike the fortresslike temples of her predecessors.

The temple's lower levels featured pools and gardens planted with fragrant trees. Supersized images of Hatshepsut were everywhere. Some 100 colossal statues of the female pharaoh as a sphinx guarded the processional way. Lining the terraces were more images of the ruler (some more than ten feet tall) in various devotional attitudes—kneeling with offerings to the gods, striding into eternity, or in the guise of Osiris, the mummiform god of death and resurrection.

Miraculously, a number of these statues—some reassembled, others still in a fragmentary state—survive and are included in the current exhibition. Most are massive, masculine and meant to be seen from a distance. But not all. For example, an exquisitely carved granite statue reunited for the show (p. 84)—the head and lower parts are owned by the Metropolitan; the torso comes from Leiden's Rijksmuseum—is a rare example of Hatshepsut depicted as both female and pharaoh. Only slightly larger than life-size, it shows her, slender, with small, rounded breasts, seated on her throne and wearing the pharaonic *nemes*, or head cloth. Some scholars believe the statue is from an early phase of Hatshepsut's rule, before she fully adopted a masculine persona; others believe there were certain contexts in which she felt comfortable being portrayed as the woman she was. This image may have been used for cult offerings at her memorial temple and seen only by a privileged few. As depicted in this statue, she has large almond eyes, a slightly aquiline nose, narrow chin and confident, quiet smile. Does it reflect Hatshepsut's actual appearance? Or, like so much pharaonic portraiture, does it simply conform to the artistic conventions of the time? Hatshepsut's mummy has never been identified, so we cannot know for sure.

Hatshepsut's temple also featured a series of reliefs marking the achievements of her reign, including a storied trading expedition to the mysterious and distant land called Punt, believed to be somewhere on the coast of the Red Sea, perhaps in current-day Eritrea. The reliefs show the Egyptians loading their boats in Punt with an array of highly prized luxury goods—ebony, ivory, gold, exotic animals and incense trees. "Never," reads an inscription, "were such things brought to any king since the world was."

As a work of art, of architecture and of self-glorification, Hatshepsut's memorial temple was an enormous enterprise that must have involved an army of workers. It's almost certain, scholars agree, that Senenmut, the official overseer of works at Deir el-Bahri, was the mastermind, if not the actual architect, of the temple. He had most likely begun his climb to power during the reign of Thutmose II, when he was appointed tutor to Hatshepsut's daughter, Neferure. But his influence soared with Hatshepsut's accession to the throne. In time he acquired some 93 titles, the most prestigious of which was Great Steward of Amun (the god of Thebes), which put him in charge of all of Karnak's building and business activities.

Hatshepsut's influential chief minister, Senenmut (above as depicted with Hatshepsut's daughter, Neferure, whom he tutored) was the overseer of works at Deir el-Bahri and may have been the architect of Hatshepsut's memorial temple there.

Many of Senenmut's monuments to himself (some 25—a staggering number for a nonroyal) mention his exceptional access to the throne; he was a "true confidant" of the pharaoh and the "one upon whose utterances his Lord relied." But earlier scholars' belief that Senenmut was the real force behind Hatshepsut's rule—not "even a woman of the most virile character could have attained such a pinnacle of success without masculine support," wrote historian Alan Gardiner in 1961—has now been largely discounted by experts as a woeful underestimation of Hatshepsut.

Did she and Senenmut share more than power? Probably not, most scholars have concluded. "I think Hatshepsut was too conscious of her position to have gotten involved with him physically," says Keller. Dorman agrees but allows that the pharaoh and her favorite minister may well have been victims of speculation and gossip. He cites a crude drawing scrawled on a Deir el-Bahri wall that shows a man

DETAIL: TRUSTEES OF THE BRITISH MUSEUM, LONDON

"I think that people recognize now, because it happened so late in Thutmose III's reign, that it wasn't personal animosity" that motivated Thutmose's efforts to erase all evidence of Hatshepsut's rule, says Egyptologist Peter Dorman. In the relief above, Hatshepsut stood in front of Thutmose III (far right).

thought to be Senenmut having sex with a woman in pharaonic headdress. "It could be them," says Dorman. "Whether it reflects reality or not, we don't know."

Senenmut's fate is a mystery. His privileged position allowed him to build a splendid tomb for himself near Hatshepsut's—which is in the Valley of the Kings, just west of Deir el-Bahri—but he apparently never occupied it. The tomb suffered major damage, including the smashing of his impressive, if unused, stone sarcophagus. It was long thought that either Hatshepsut or Thutmose III were the culprits, but recent scholarship suggests some combination of religious upheaval, tomb robbers and natural collapse.

Hatshepsut's own tomb was cut into the base of the cliffs on the east side of the Valley of the Kings, and was large enough to accommodate both her sarcophagus and that of her father—reburying him in her tomb was yet another attempt to legitimize her rule. It's believed that Hatshepsut died (possibly in her late 40s) around 1458 B.C., the year that Thutmose III first used the title "Ruler of Maat."

THUTMOSE III'S DESTRUCTION of Hatshepsut's monuments has long been recognized as a conscientious—and very nearly successful—attempt to obliterate her name and memory from history. But was it, as many early Egyptologists had assumed, an act of revenge and hatred? In recent decades, scholars have reexamined the archaeological evidence and come to the startling conclusion that the destruction, presumed to have been initiated soon after Hatshepsut's death, was actually not begun until some 20 years later, toward the end of Thutmose III's own long reign (c. 1458-1425 B.C.). "I think that people recognize now, because it happened so late in Thutmose III's reign, that it wasn't personal animosity," says Dorman of the rampage. "For some reason, Thutmose III must have decided it was necessary to essentially rewrite the official record of Hatshepsut's kingship"—which meant eradicating all traces of it to suggest that the throne had gone directly from his father to him.

While numerous theories abound, most contemporary Egyptologists agree that the effort to delete any evidence of Hatshepsut's rule had something to do with Thutmose III's concerns about the succession of power after his death. Was there some threat to the legitimacy of his own son, Amenhotep II, who in fact did succeed him? Possibly. But Dorman suggests that Hatshepsut's unconventional reign may have been too successful, a dangerous precedent "best erased," he writes in the catalog, "to prevent the possibility of another powerful female ever inserting herself into the long line of Egyptian male kings."

The story of Hatshepsut's reign will probably never be complete. "She's like an iceberg," says Joyce Tyldesley, scholar and author of the 1996 biography *Hatchepsut: The Female Pharaoh*. "On the surface we know quite a lot about her. But there's so much we don't know."

"I see her as I do Elizabeth I," says Roehrig. "Someone who was probably trained from childhood to be a representative of the royal family. And you are put in extraordinary circumstances and you rise to the occasion. You do what's necessary to get the job done." Tyldesley agrees, but she also feels that Hatshepsut may have been keenly conscious of her exceptional place in history. "This is just speculation," she says, "but I think she was almost aware that she might be forgotten or that her actions would be misunderstood." Toward the end of her reign, Hatshepsut erected a second pair of obelisks at Karnak. On one the inscription reads: "Now my heart turns this way and that, as I think what the people will say—those who shall see my monuments in years to come, and who shall speak of what I have done."

ISABEL STUENKEL

Visit Smithsonian.com to see more Hatshepsut pictures.

STORM WARNINGS

Is global warming to blame for the intensity of recent Atlantic hurricanes? While experts debate that question, they agree that more devastating tempests are headed our way

BY J. MADELEINE NASH

PLUNGING THROUGH A STAND OF POISON IVY, Jeffrey Donnelly wades into Oyster Pond and begins assembling a crude raft. He and two colleagues lash a piece of plywood on top of two aluminum canoes and push off, paddling their makeshift catamaran toward a fringe of scrub bordering this brackish pond in Woods Hole, Massachusetts. Donnelly whips out a hand-held GPS receiver and takes a reading. "This is the place," he says. After setting out a web of anchors, the team settles into hours of monotonous labor. They push long pipes through nearly 25 feet of tea-colored water into thick layers of sediment below. The moans of foghorns drift in from Vineyard Sound, and mist rises and falls like a scrim.

"One, two, three!" Donnelly brings up a five-foot-long core of sediment encased in transparent plastic. "Look!" he whoops, pointing to a thick deposit of yellowish sand bracketed by black-brown pond muck. "That's a hurricane!"

Donnelly, a geologist and paleoclimatologist at the Woods Hole Oceanographic Institution, has been prowling the lakes and marshes that dot the New England coastline for nearly a decade, assembling a record of hurricanes going back hundreds of years. The record takes the form of sand washed inland by monstrous storm surges.

STEPHEN ROUNTREE; P. 89 ROGER BALL / CORBIS

Warmer seas and a surge of development along the U.S. East Coast (a South Miami trailer park after Andrew, in 1992) spell trouble (2005's storm tracks, opposite) for a decade or more.

The ghosts of hurricanes past—or at least their sandy remains—may help meteorologists predict future storms. Jeffrey Donnelly (top left) wrestles with a core from a Woods Hole, Massachusetts, pond. The Hurricane of 1938 (possibly the light stripe in the core, top right) killed some 680 people.

TOM KLEINDINST / WOODS HOLE OCEANOGRAPHIC INSTITUTION (2); AP / WIDE WORLD PHOTOS

What Donnelly is staring at now may be the gritty calling card of the Great New England Hurricane of 1938, which lifted up a dome of water 20 feet high as it slashed its way from Long Island to Cape Cod with Katrina-class force, leaving at least 680 people dead and tens of thousands homeless. Or perhaps the sand is from the Great Colonial Hurricane of 1635, which ravaged the fledgling Plymouth and Massachusetts Bay colonies, or the Great September Gale of 1815, which put Providence, Rhode Island, under more than ten feet of water.

Hurricanes that intense may not threaten Northeastern states as often as they do Louisiana, Florida or the Carolinas, but they aren't as rare as the people living along the coastline from Virginia to Maine might like to think. The sediment cores Donnelly has collected indicate that devastating hurricanes have slammed into the Northeastern seaboard at least nine times in the past seven centuries.

Understanding hurricane history takes on new urgency in the wake of the worst hurricane season on record. In 2005, the Atlantic basin produced more tropical storms, 28, and more full-blown hurricanes, 15, than any year in at least the past half century. Last year, memorable for its four major hurricanes, could also lay claim to three of the six strongest storms on record. And as bad as it was, the 2005 season was just an exclamation point in a decade-long hurricane onslaught, which will end—well, scientists can't agree on when, or even whether, it will end.

That's because late last year, around the time Hurricane Katrina stormed ashore in Mississippi, climate scientists were engaged in an urgent debate. According to one group, the increasing intensity of Atlantic storms comes from a natural climate cycle that causes sea surface temperatures to rise and fall every 20 to 40 years. According to another group, it comes from human emissions of carbon dioxide and other greenhouse gases. (So far, no one has linked the *number* of hurricanes to global warming.) In the first scenario, the fever in the Atlantic might not break for another decade or more; in the second, it might last for the rest of this century and beyond.

Evidence from sediment cores collected by Donnelly and others hints that long before industrial activity began pumping the air full of heat-trapping gases, particularly carbon dioxide, naturally occurring climate shifts influenced hurricane activity, either by changing wind patterns that steer hurricanes toward or away from land, or by al-

Veteran science reporter **J. MADELEINE NASH** *is the author of* El Niño: Unlocking the Secrets of the Master Weather-Maker.

tering the frequency and intensity of the storms themselves. Cores collected by Louisiana State University geographer Kam-biu Liu from four Gulf Coast lakes and marshes, for example, show that major hurricanes struck that region three to five times more often between 3,500 and 1,000 years ago than in the ten centuries since. Donnelly, for his part, has pieced together a similar record in Vieques, Puerto Rico; there, the active hurricane pattern starts 2,500 years ago and ends 1,500 years later. But, Donnelly cautions, these are just a few scattered jigsaw pieces. "We have to collect a lot more pieces in order to put the puzzle together." And that is why he's out in the middle of Oyster Pond, coring his way through time.

I AM TO MEET DONNELLY the next morning at his lab. As a strong thunderstorm rolls through, Donnelly pedals in on a mountain bike looking like a sopping wet Power Ranger. Inside a cavernous room, chockablock with tools, the first core is standing on end, giving the slurry in the topmost foot or so a chance to settle. On the floor lie two long cores in aluminum pipes.

Some notable storms (from left, opposite, to right): The Great New England Hurricane, Woods Hole, Mass., 1938; Hurricane Hazel, Wilmington, North Carolina, 1954; Miami, Florida, 1935; and Galveston, Texas, 1900, the deadliest hurricane in U.S. history, which killed between 8,000 and 12,000 people.

Using a hacksaw, Donnelly cuts the cores into shorter lengths, then uses a table saw to slice them in half lengthwise. Water puddles onto the floor, and we smell rotten eggs—hydrogen sulfide produced by microbes that live within the pond's deep, dark pockets of organic debris. Donnelly opens one of the cores, and I can see a sequence of sandy strips, the spoor of ancient hurricanes.

Later Donnelly takes me into a walk-in refrigerator filled with core samples from some 60 sites stretching from the Yucatán Peninsula to the Lesser Antilles and from the Chesapeake Bay to Cape Cod. In a few years, he says, he hopes to have enough data to put the present—and the future—into broader perspective. But he can't do that yet.

The control box for the earth's climate machine, he muses, has many knobs, and scientists are only beginning to identify the ones that dial the awesome power of hurricanes up and down. "The point is, we know the knobs are there," Donnelly says, and if the natural system can tweak them, so can human beings. It's a thought I hold onto as I prepare to dive into the maelstrom of the debate over hurricanes and global warming.

WHEN CHRISTOPHER COLUMBUS arrived in the New World, he heard its native inhabitants speak fearfully of the storm god they called Jurakan. On his fourth voyage, in 1502, the Italian explorer and his ships weathered a hurricane that destroyed much of the settlement his brother Bartolomeo had founded six years earlier at Nueva Isabela, later rechristened Santo Domingo. "The storm was terrible," Christopher Columbus wrote, "and on that night the ships were parted from me." His ships reassembled afterward, but some 25 other ships in a fleet launched by the governor of Hispaniola foundered in wind-frenzied seas.

The scientific study of hurricanes leapt forward in 1831, when William Redfield, a self-taught meteorologist trained as a saddler, finally grasped their nature. In an article published in the *American Journal of Science*, Redfield described patterns of damage wrought by a powerful storm that had swept through New England ten years earlier, after passing directly over the New York metropolitan area. In one part of Connecticut, he noted, trees appeared to have been blown down by southwesterly winds; in another part, by winds from nearly the opposite direction. Redfield nailed down the rotary nature of a hurricane's eye wall, a churning cylinder of wind circling a calm center.

A systematic effort to understand these storms dates to 1898, when President William McKinley directed what was then the U.S. Weather Bureau to expand its rudimentary network for hurricane warnings. The impetus was the outbreak of the Spanish-American War. "I am more afraid of a . . . hurricane than I am of the entire Spanish Navy," McKinley reportedly said. In 1886, a record seven hurricanes hit the U.S. coast; one completely destroyed the thriving port city of Indianola, Texas. The year 1893 was almost as bad; six hurricanes hit the United States. One came ashore near Savannah, Georgia, overwhelming the low-lying Sea Islands off the South Carolina coast; another devastated the island of Cheniere Caminanda off the Louisiana coast. In those two storms alone, 4,500 lives were lost.

Over the next half century, forecasters relying on obser-

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vations of winds and pressure taken by an expanding network of ship and ground-based weather stations struggled to provide hurricane warnings to vulnerable populations. They often failed. In 1900, a hurricane burst upon the unsuspecting citizens of Galveston, Texas, killing 8,000 to 12,000. In 1938, people stood along Long Island's Westhampton Beach marveling at what they thought was an approaching fog bank, only to realize, too late, that it was the storm-seized ocean heaving up. Twenty-nine people died.

World War II propelled hurricane science into the modern era. In July 1943, Army Air Forces pilot Joseph B. Duckworth—on a dare, it is said—flew through the eye of a hurricane as it neared the Texas coast; he did it again a couple of hours later as weather officer First Lt. William Jones-Burdick took measurements at 7,000 feet, inside the storm's eye. In February 1944, the Joint Chiefs of Staff approved the first of a series of hurricane missions by Army and Navy aircraft. Later that year, military planes gave chase to a storm that came to be known as the Great Atlantic Hurricane, following it as it roared up the East Coast, taking aim at New England. All along the storm's path, radio newscasters blared out warnings. Of 390 deaths, all but 46 occurred at sea.

After the war, the U.S. Weather Bureau—renamed the National Weather Service in 1970—established a formal program of hurricane research. To study these formidable whirlwinds, flights continued to transport scientists through turbulent eye walls and the eerie stillness of the eye itself. In the 1960s, earth-orbiting satellites began providing even higher observational platforms. Since then, forecasters have progressively narrowed "the cone of uncertainty," the teardrop-shaped blob that surrounds their best predictions of where a hurricane is likely to go. At 48 hours, track forecasts are now "off" on average by just 118 miles; at 24 hours, by less than 65 miles, both significant improvements over 15 years ago. Despite these advances, hurricanes undergo sudden surges in power that are easy to spot once they start but dauntingly hard to predict.

LIKE A GIANT BUMBLEBEE, the P-3 Orion buzzes in from Biscayne Bay, dipping a wing as it passes the compact concrete building that houses the National Oceanic and Atmospheric Administration's Miami-based Hurricane Research Division. The plane, a modification of the submarine hunters built in the 1960s for the U.S. Navy, is one of two that fly scientists in and out of some of the planet's mightiest storms, including Hurricane Katrina as its engorged eye neared landfall.

Among those on that flight was research meteorologist Stanley Goldenberg, whose third-floor office looks, appropriately enough, as if a hurricane just blew through it. Goldenberg is well acquainted with hurricanes blowing though. In 1992 Hurricane Andrew demolished his family's rented house in Perrine, Florida. A computer-enhanced satellite image of the hurricane, with its monstrous circular eye wall, now hangs on his wall. "The bagel that ate Miami," he quips.

Hurricane forecasters can predict a storm's path about 50 percent more accurately than they could 15 years ago. But hurricanes still veer or strengthen unexpectedly. And sometimes there's just nowhere to hide (Hurricane Katrina, above, one day before it made landfall near New Orleans).

Hurricanes belong to a broad class of storms known as tropical cyclones, which also occur in the Indian and Pacific oceans. They do not develop spontaneously but grow out of other disturbances. In the Atlantic, most evolve out of "African waves," unstable kinks in the atmosphere that spiral off the West African coast and head toward Central America. Along the way, these atmospheric waves generate

NOAA / CORBIS

Christopher Landsea (left, at a National Oceanic and Atmospheric Administration office in Miami) and Stanley Goldenberg (right, aboard a NOAA jet) say there's not enough data to blame recent powerful hurricanes on global warming. Instead, they say, other air and sea conditions are responsible.

JOHN LOOMIS; NOAA

ephemeral clusters of thunderstorm-producing clouds that can seed hurricanes.

At the same time, hurricanes are much more than collections of thunderstorms writ large; they stand out amid the general chaos of the atmosphere as coherent, long-lasting structures, with cloud towers that soar up to the stratosphere, ten miles above the earth's surface. The rise of warm, moist air through the chimney-like eye pumps energy into the developing storm.

Ocean warmth is essential—hurricanes do not readily form over waters cooler than about 79 degrees Fahrenheit—but the right temperature is not enough. Atmospheric conditions, such as dry air wafting off the Sahara, can cause hurricanes—along with their weaker cousins, tropical storms and depressions—to falter, weaken and die. Vertical wind shear—the difference between wind speed and direction near the ocean's surface and at 40,000 feet—is another formidable foe. Among the known regulators of vertical wind shear is El Niño, the climate upheaval that alters weather patterns around the globe every two to seven years. During El Niño years, as Colorado State University tropical meteorologist William Gray was first to appreciate, high-level westerlies over the tropical North Atlantic increase in strength, ripping developing storms apart. In 1992 and 1997, both El Niño years, only six and seven tropical storms formed, respectively, or a quarter of the number in 2005. (Then again, Goldenberg observes, the devastating Hurricane Andrew was one of the 1992 storms.)

For years, Goldenberg notes, scientists have been pondering why the number of Atlantic hurricanes varies from year to year, even though roughly the same number of African waves move out over the ocean each year. What accounts for the difference? El Niño explains some, but not all, of the variance. By combing through the historical record and more recent recordings from scientific instruments, Gray, along with Goldenberg's colleague Christopher Landsea, has found another pattern: hurricanes in the Atlantic march to a slowly alternating rhythm, with the 1880s and 1890s very active, the early 1900s comparatively quiescent, the 1930s through 1960s again active, 1970 through 1994 quiescent again.

Five years ago, a possible explanation for this pattern emerged. Goldenberg shows me a graph that plots the number of major hurricanes—Category 3 or higher—that spin up each year in the Atlantic's main hurricane development region, a 3,500-mile-long band of balmy water between the coast of Senegal and the Caribbean basin. Between 1970 and 1994, this region produced, on average, less than half the number of major hurricanes that it did in the decades before and after. Goldenberg then hands me a second graph. It shows a series of jagged humps representing the Atlantic multi-decadal oscillation, a swing of sea surface temperatures in the North Atlantic that occurs every 20 to 40 years. The two graphs seem to coincide, with the number of major hurricanes falling as waters cooled around 1970 and rising as they began warming about 1995.

Scientists have yet to nail down the cause of the multi-decadal oscillation, but these striking ups and downs in sur-

Kerry Emanuel (at the Massachusetts Institute of Technology) says climate change has already strengthened hurricanes, and storms may get worse. He and his critics issued a joint statement warning that overbuilding on ocean coasts—"our lemming-like march to the sea"—is just asking for trouble.

face temperatures appear to correlate—somehow—with hurricane activity. "You can't just heat up the ocean by 1 degree Celsius and Pow! Pow! Pow! get more hurricanes," says Goldenberg. More critical, he thinks, are atmospheric changes—more or less wind shear, for example—that accompany these temperature shifts, but what comes first? "We still don't know which is the chicken and which is the egg," he says. "The ocean tends to warm when the trade winds get weaker, and the trade winds can get weaker if the ocean warms. Will we lock it down? Maybe someday."

After leaving Goldenberg's office, I drive across town to the National Hurricane Center, a low-lying bunker whose roof bristles with satellite dishes and antennae. Inside, as computer monitors rerun satellite images of Katrina's savage waltz toward the Gulf Coast, top National Oceanic and Atmospheric Administration officials have gathered to announce the agency's best estimate of how many tropical storms and hurricanes are likely to form in 2006. It's not an encouraging forecast: eight to ten hurricanes, fewer than last year, but four to six of them Category 3s or higher. (Last year there were seven.) The predictions are based, in large part, on the multi-decadal oscillation. "The researchers are telling us that we're in a very active period for major hurricanes," says Max Mayfield, the center's director, "one that will probably last at least 10 to 20 more years."

FROM HIS 16TH-FLOOR OFFICE on the Massachusetts Institute of Technology campus, meteorologist Kerry Emanuel commands a crow's-nest view of the esplanade along the Charles River, the dividing line between Boston and Cambridge. In 1985, he remembers, the windows wept with spray blown up from the river by Hurricane Gloria, a moderately strong storm that, nonetheless, made a mess of the Northeast. A painting by a Haitian artist that shows people and animals drowning in a storm surge hangs on a wall near his desk.

Last year, right after Katrina hit, Emanuel found himself in the media spotlight. A few weeks earlier he had published evidence in the journal *Nature* that hurricanes in both the North Atlantic and the western basin of the North Pacific had undergone a startling increase in power over the past half century. The increase showed up in both the duration of the storms and their peak wind speeds. The cause, Emanuel suggested, was a rise in tropical sea surface temperatures due, at least in part, to the atmospheric buildup of carbon dioxide and other heat-trapping gases caused by the burning of fossil fuels.

Even scientists who would expect hurricanes to intensify in response to greenhouse warming were stunned by Emanuel's suggestion that global warming has already had a profound effect. Computer simulations of a warming world, notes climate modeler Thomas Knutson of the Geophysical Fluid Dynamics Laboratory in Princeton, New Jersey, suggest that by the end of this century, peak sustained wind speeds could increase by around 7 percent, enough to push some Category 4 hurricanes into Category 5 territory. But Knutson, along with many others, did not think that

JASON GROW

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the intensity rise would be detectable so soon—or that it might be five or more times larger than he and his colleagues anticipated. "These are huge changes," Knutson says of Emanuel's results. "If true, they may have serious implications. First we need to find out if they're true."

Emanuel's paper raised the ante in what has grown into an extremely intense debate over the sensitivity of the earth's most violent storms to gases spewed into the atmosphere by human beings. In the months since the dispute began, dozens of other studies have been reported, some of which support Emanuel's conclusions, others of which call them into question. The debate has grown so impassioned that some former colleagues now scarcely speak to one another.

As Emanuel sees it, sea surface temperatures are important because they tweak a fundamental dynamic that controls hurricane intensity. After all, storm clouds form because the ocean's heat warms the overlying air and pumps it full of moisture. And the warmer the air is, the more vigorous its rise. For their part, Emanuel's critics, Goldenberg and Landsea among them, don't utterly discount ocean warmth. They just put far more emphasis on other factors like wind shear as the main determinants of storm intensity.

Sorting out the differences between the two camps is not easy. Goldenberg and Landsea, for example, grant that greenhouse gases may be contributing to a slight long-term rise in sea surface temperatures. They just don't think the effect is significant enough to trump the natural swings of the Atlantic multi-decadal oscillation. "It's not simply, yes or no, is global warming having an effect?" says Landsea, the science and operations officer for the National Hurricane Center. "It's how much of an effect is it having?"

Emanuel, while respectful of Landsea, is not backing down. In fact, he has now stirred up a second storm. "If you'd asked me a year ago," Emanuel says, "I would have probably told you that a lot of the variability in hurricane activity was due to the Atlantic multi-decadal oscillation. I've now come to the conclusion that the oscillation either doesn't exist at all or, if it does, has no perceptible influence on the temperature of the tropical Atlantic in the late summer and fall"—that is, in hurricane season.

Emanuel says that much of the cooling in the tropical North Atlantic in the 1970s can be traced to atmospheric pollutants, specifically to a haze of sulfurous droplets spewed out by volcanoes and industrial smokestacks. Global climate modelers have recognized for years that this haze in the atmosphere acts as a sunshade that cools the earth's surface below. Emanuel says that now that this form of air pollution is on the wane (and this is a good thing for all sorts of reasons having nothing to do with hurricanes), the warming influence of greenhouse gas pollution, and its effect on hurricanes, is growing ever more pronounced. "We will have some quiet [hurricane] years," he says. "But unless we have a really big volcanic eruption, we'll never see another quiet decade in the Atlantic in our lifetime or that of our children."

Is such a grim prediction warranted? Scientists on the periphery of the debate aren't yet sure. For now, says meteorologist Hugh Willoughby of Florida International University, the points of agreement among experts are more important than the differences. Whether a natural oscillation or greenhouse warming is to blame, the odds of a major hurricane striking the U.S. coastline are higher than they have been for more than a generation. And the dangers such storms pose are higher than ever.

Before Katrina devastated the Gulf Coast, killing 1,200, it sideswiped Florida (Ft. Lauderdale), killing 11. Katrina broke Andrew's record as the costliest U.S. storm. How long will the new record last?

I DRIVE DOWN Brickell Avenue, the heart of Miami's financial district, past bank buildings with windows still boarded up, then wend through residential neighborhoods where a smattering of rooftops remain covered with blue tarps, a reminder that even a glancing blow from a hurricane like Wilma, which slammed into Miami last October as a Category 1 storm, can pack a wicked punch.

I continue south 65 miles to the Florida Key called Islamorada, crossing over a series of bridges that connect one low-lying coral islet to another. It's the route along which automobiles crawled in the opposite direction last year as some 40,000 people fled the Lower Keys in advance of Hurricane Dennis in July. It's also the route on which an 11-car train was washed off its tracks in the 1935 Labor Day Hurricane.

The train was en route from Miami to rescue a Depression-era work crew composed largely of World War I veterans, many of whom had participated in the Bonus March on Washington in 1932. Encamped in flimsy Civilian Conservation Corps housing, the men had been working on a bridge-building project. The train got to the Islamorada station shortly after 8 p.m., just in time to confront an 18-foot-high storm surge that washed over the Upper Keys like a tsunami and knocked the train off its tracks. In all, more than 400 people died, among them at least 259 of the veterans. In a magazine piece, an enraged Ernest Hemingway, then living in Key West, lambasted Washington politicians for the loss of so many lives. "Who sent nearly a thousand war veterans . . . to live in frame shacks on the Florida Keys in hurricane months?" he asked.

Hemingway's veterans are long gone from the Keys. In their place are 75,000 permanent residents, supplemented during the year by more than 2.5 million visitors. The Labor Day storm, it is worth remembering, didn't look like much

MIKE THEISS / JIM REED PHOTOGRAPHY / AURORA PHOTOS; P. 97 JEFFREY SALTER / REDUX-REA

just a day before it hit; it exploded from a Category 1 to a Category 5 hurricane in 40 hours, about the amount of time an evacuation of the Keys might take today. As the storm bore down, sustained winds in the eye wall reached 160 miles per hour, with gusts that exceeded 200 miles per hour. The winds lifted up sheet metal roofs and wooden planks, hurling them through the air with lethal force; in some cases, as one writer described, "pounding sheets of sand sheared clothes and even the skin off victims, leaving them clad only in belts and shoes, often with their faces literally sandblasted beyond identification."

In an era overshadowed by the specter of large-scale climate change, the past may appear an inadequate guide to the future, but it's the only one we have. Certainly, there is no reason to think that major hurricanes, some as powerful as the 1935 Labor Day storm, won't continue to strike the U.S. coastline at least as often as before. And that fact alone—independent of any increase in hurricane intensity—affords ample reason for concern. The destructive potential of hurricanes, it's important to keep in mind, does not stem solely from their intrinsic power. No less important is America's love affair with waterfront living. From Texas to Maine, the coastal population now stands at 52 million, versus less than 10 million a century ago. On average, there are 160 people per square mile in hurricane belt states versus 61 per square mile in the rest of the country.

Adjusted for inflation, the 1938 New England hurricane destroyed or damaged some $3.5 billion worth of property. Today, estimates Roger Pielke Jr., a professor of environmental studies at the University of Colorado at Boulder, the same hurricane would leave behind a tab of up to $50 billion. The 1900 Galveston hurricane would cause property losses as high as $120 billion. And at the very top of Pielke's list of catastrophic disasters is a replay of the Category 4 hurricane that slashed into Miami in 1926, eighty years ago this September. Were the same hurricane to hit the Miami area in 2006, Pielke estimates, the bill could approach $180 billion. "And," he adds, "if you want to compare apples to apples, Katrina was an $80 billion storm."

In 1926, Miami was just coming off a growth spurt; the city bustled with transplants from the north who had never experienced a hurricane before. As the eye passed overhead, hundreds of these innocents spilled into the streets to gawk, prompting Richard Gray, the horrified chief of the city's Weather Bureau, to run out of his office, screaming at people to take cover. By the time the storm ended, at least 300 people had died and property damage was estimated at $76 million, around $700 million in today's dollars. "The intensity of the storm and the wreckage that it left cannot be adequately described," Gray later recalled. "The continuous roar of the wind; the crash of falling buildings, flying debris and plate glass; the shriek of fire apparatus and ambulances that rendered assistance until the streets became impassable."

Before leaving Miami, I take a last drive through the downtown area, which is in the midst of yet another building boom, its skyline spiky with cranes that loom over streets and sidewalks like mechanical dinosaurs. Showcase buildings designed by famous architects—including Cesar Pelli's Performing Arts Center and Frank Gehry's concert hall for the New World Symphony—are rising toward the sky. Today Miami-Dade County has a population approaching 2.5 million, 25 times its 1926 number. Neighboring Broward County, which had not quite 15,000 residents 80 years ago, is fast approaching the 2 million mark. The air is hot, steamy, swelling with clouds.

Storms are named once wind speeds reach 39 miles per hour. Names stick largely to the Latin alphabet through "W" (Hurricane Wilma in Miami in October, below), and most years it provides enough letters. But in 2005, meteorologists had to turn to the Greek alphabet to name the year's 28 major storms.

New York's breathtaking Finger Lakes district has inspired American notables from Mark Twain to Harriet Tubman

BY JONATHAN KANDELL
PHOTOGRAPHS BY BEN STECHSCHULTE

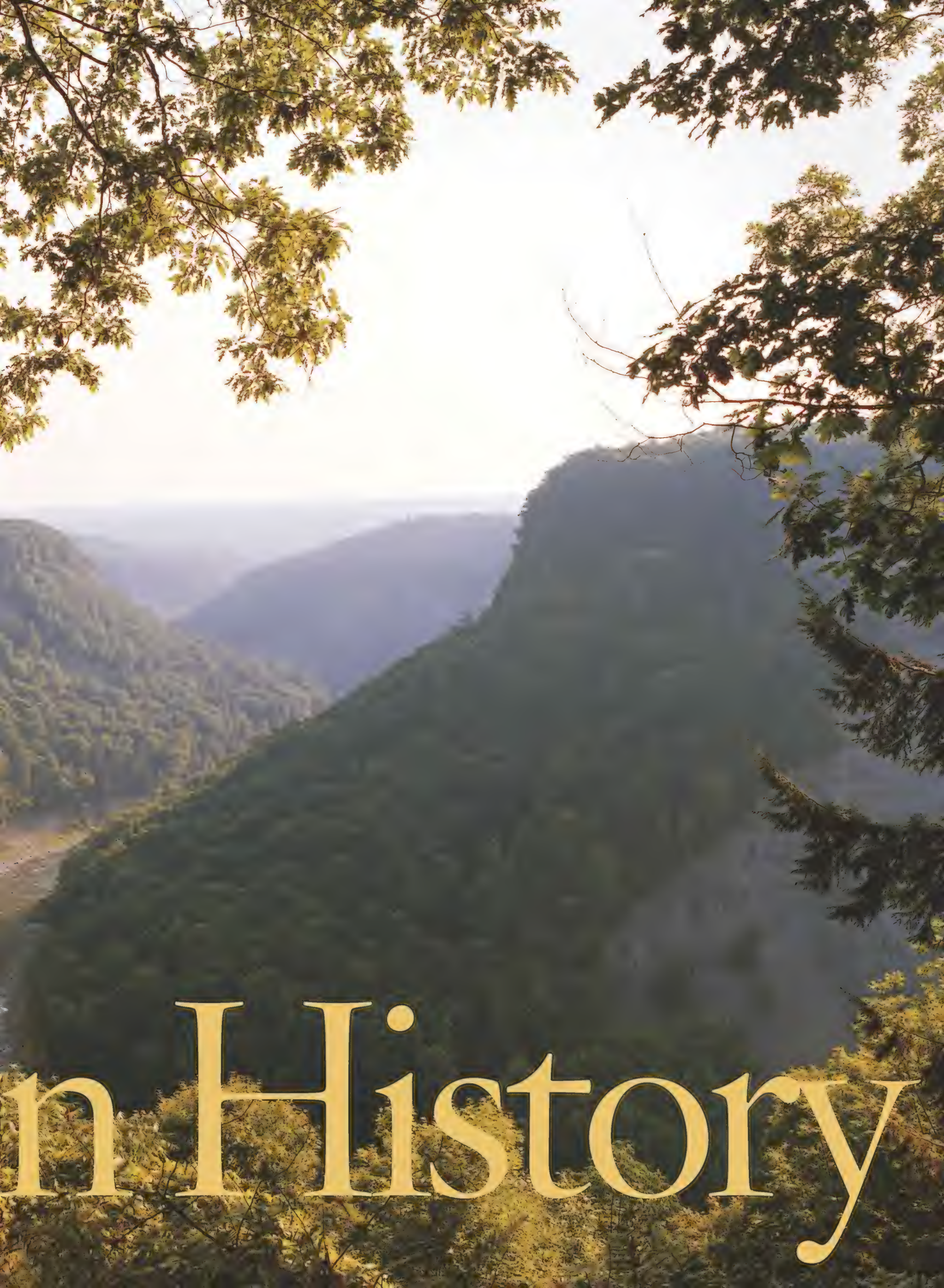
"IT IS THE LOVELIEST STUDY you ever saw," Mark Twain wrote to a friend about the octagonal hilltop pavilion his in-laws provided him in 1874. Located at Quarry Farm, just outside the town of Elmira in northwestern New York, Twain's aerie commanded ravishing views of farms and hills retreating into blue mists. To the north lay Seneca Lake, one of 11 slender bodies of water that give the Finger Lakes area its name. "When the storms sweep down the remote valley and the lightning flashes . . . and the rain beats upon the roof over my head—imagine the luxury of it," Twain exulted.

The author spent 20 summers there. Five mornings a week, after a breakfast of steak and coffee at his in-laws' house, he would tuck a bundle of papers under an arm and trudge up the hill to his study. Puffing away on cigars, he wrote as many as 65 pages a day by hand. It was here that Twain wrote much of his two masterpieces, *Tom Sawyer*, published in 1876, and *Huckleberry Finn*, in 1884. (The pavilion was moved to nearby Elmira College in 1952.)

Twain is but one of many historical figures linked to this fertile 4,692-square-mile corner of New York state, anchored on the north by Syracuse, Rochester and Buffalo, and on the south by smaller cities such as Corning, Elmira and Ithaca. A short list of other notable names includes the women's rights pioneer Elizabeth Cady Stanton; banker Frederick Ferris Thompson and his wife, Mary Clark Thompson, who over-

Mark Twain, who spent summers in the Finger Lakes, called the area "a fore-taste of heaven." The region's dramatic views (Letchworth State Park, known as the "Grand Canyon of the East," opposite) were carved by ice age glaciers.

Steepedi



n History

"Imagine the luxury of it," Mark Twain (above in his study near Elmira, 1903) wrote of the area's appeal (Lower Falls, opposite). The roots of the women's suffrage movement can be located here: in Seneca Falls, the home (right) of Elizabeth Cady Stanton (seated, inset, with Susan B. Anthony) is a historic landmark. Of the right to vote, Stanton declared: "Have it we must."

saw the creation of one of the nation's great gardens; William Pryor Letchworth, a manufacturer turned pioneering environmentalist who restored a deforested wasteland into the graceful state park bearing his name; and Harriet Tubman, the escaped slave who led scores of runaways to freedom on the Underground Railroad.

Driving north from Twain's pavilion near Elmira (pop. 30,073), I pass century-old stands of oak, and fields of corn stretching to the horizon. At an overlook on Seneca Lake, I see why the Iroquois believed the Finger Lakes were created by the Great Spirit's hands as he spread them upon the land to bless it. Geologists offer a more prosaic explanation: ice age glaciers gouged the terrain as they advanced and retreated millennia ago. In the early 1800s, the watery network they created became the basis for the Erie Canal system connecting the area to the Hudson River and New York City. "When the canal opened in 1825, this region became the nation's breadbasket," says local historian Frances Dumas.

Manufacturing and commercial wealth followed. Twain, as it happens, had married into one of the richest Finger Lakes families. His wife, Olivia, was the daughter of Jervis Langdon, a shopkeeper turned millionaire coal merchant. Like many local entrepreneurs, Langdon held socially progressive views. A fervent abolitionist, in 1838 he offered shelter in his home to a runaway slave, the future intellectual and political leader Frederick Douglass. To Twain, "whose own father had abused and sold slaves and helped send abolitionists to prison, the Langdons were a revelation," wrote Geoffrey C. Ward and Dayton Duncan in their 2001 Twain biography, *Mark Twain: An Illustrated Biography*.

SOME 70 MILES NORTH OF ELMIRA, near the far end of Seneca Lake, I arrive at Seneca Falls (pop. 9,412), where Elizabeth Cady Stanton (1815-1902) sounded the call for equality of the sexes. She and her husband, Henry, moved to this mill town in 1847. Their modest house at 32 Washington Street, where the Stantons raised their seven children, is now a museum full of such curiosities as a plaster cast of the interlocking forearms of Elizabeth and fellow suffragette Susan B. Anthony.

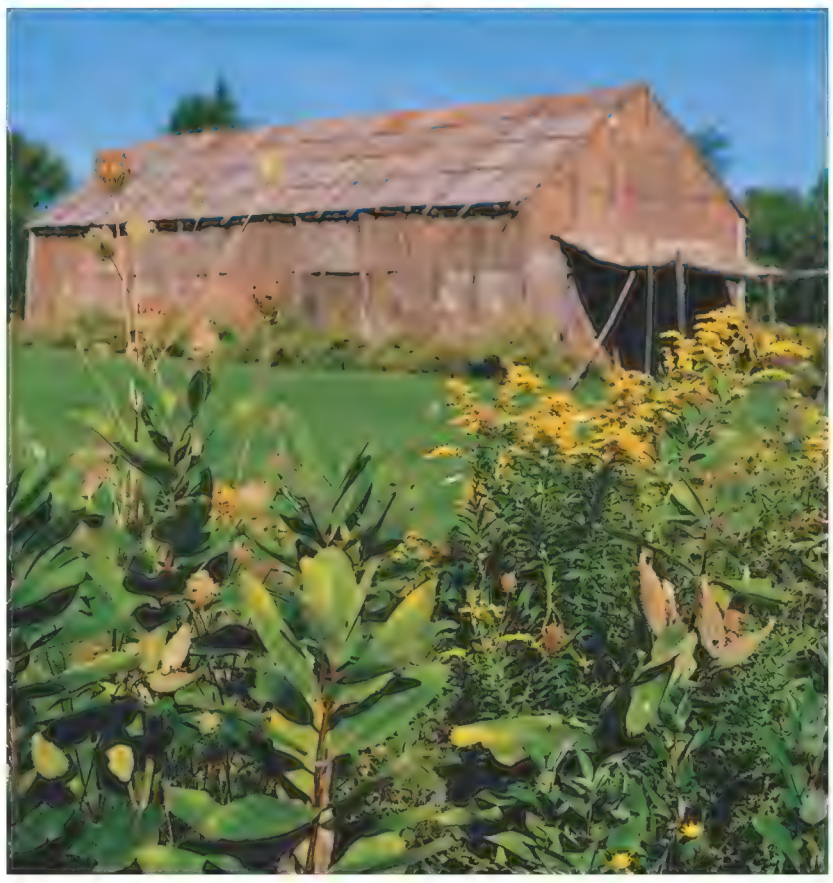
For Elizabeth Stanton, accustomed to Boston, Seneca Falls came as a shock. The dearth of intellectual and cultural life left her, she said, with "mental hunger." She was appalled by the domestic violence among her neighbors. "If a drunken husband was pounding his wife, the children would run for me," she recalled. Only a year after moving here, Stanton joined local women and their spouses over tea to discuss ways to "remedy the wrongs of society and of woman in particular." On July 11, 1848, they placed a notice in the local *Seneca County Courier* newspaper, announcing "a convention to discuss the social, civil and religious condition and rights of Woman" at Seneca Falls on July 19 and 20.

At the convention, 68 women and 32 men passed all 11 resolutions before balking at the one calling for women's suffrage—a privilege then not granted anywhere in the world. "The right is ours," Stanton told the conventioneers. "Have it we must. Use it we will." In the end, the

JONATHAN KANDELL *reports frequently on travel and history. Photographer* **BEN STECHSCHULTE** *is based in New York City.*

MARK TWAIN ARCHIVE, ELMIRA COLLEGE; LEE SNIDER / PHOTO IMAGES / CORBIS; LIBRARY OF CONGRESS

In 1998, descendants of Seneca Indians opened a replica of a longhouse (interior, above; exterior, right) at Ganondagan State Historic Site. "We wanted to give people a sense of how our ancestors had lived," says tribal leader G. Peter Jemison.



BEN STECHSCHULTE / REDUX PICTURES (2); P. 103 NASA

measure was approved, probably thanks to Stanton's friend Frederick Douglass, who convinced the gathering that without their passing the right to vote, Congress would never grant the other rights they sought. Today, Wesleyan Chapel, where the convention was held, Stanton's house and other properties constitute the Women's Rights National Historical Park.

At the time Stanton was battling for equality, just 15 miles east, on the edge of Owasco Lake in the town of Auburn (pop. 28,080), Harriet Tubman was championing another great crusade—the end of slavery. Herself an escaped slave from a Maryland plantation, Tubman made 19 clandestine trips to the South to lead some 70 slaves to freedom. When the Civil War ended in 1865, she moved into an Auburn house provided by her friend William Seward, a passionate abolitionist and secretary of state for both Lincoln

and his successor, Andrew Johnson. Tubman would live there until her death, at age 93, in 1913, eking out the funding to turn the house and its 26 acres into a nursing home. "In the last five years of her life, she opened her home for sick and elderly former slaves," says Christine Carter, the guide at the Harriet Tubman House, a 1952 replacement for the original.

William Pryor Letchworth had unlimited means to underwrite his passion—the environment. Having amassed a fortune from the manufacture of metal components for harnesses and wagons, the lifelong bachelor retired at age 48 to his country house, Glen Iris, to devote himself to philanthropy. In 1906, in a move that outflanked an electric power company wanting to build a dam on the property, he donated 1,000 acres for a preserve that would become Letchworth State Park. Located 35 miles south of Rochester, the park (which adds slivers of land to this day) had incorporated most of its 14,392 acres by the early 1930s. During the Great Depression, the New Deal's Civilian Conservation Corps planted trees here by the tens of thousands. Letchworth State Park stretches 17 miles north to south, but averages only 1 mile in width. Its axis is a gorge carved out by retreating glaciers and deepened by the Genesee River. At some points, the height from riverbed to gorge summit reaches 600 feet, earning the park the sobriquet "The Grand Canyon of the East." Three impressive cataracts punctuate the river. The Lower Falls lies at the base of a 127-step stairway down the gorge. "You can see why they are my favorite falls," says park manager Roland Beck. "Most visitors never make it down here." Beck lives year-round at Letchworth with his wife and three children, in a house on a bluff overlooking the Genesee, miles away from the nearest community. "I have no neighbors, but some people don't consider that a minus," he deadpans.

Iroquois lore attributed the creation of the 11 ice-sheet-scoured Finger Lakes (as much as two miles deep, in a satellite image, above) to their Great Spirit, who spread his hand upon the land to bless it.

Not far from his house, Beck leads me to the park's Gardeau Overlook, above the home of Mary Jemison, a European captured and adopted at age 15 by Native Americans in the mid-1700s. Jemison eventually married a Seneca and raised seven children along the Genesee. Today Seneca leader G. Peter Jemison, 61, a grandson eight generations removed, lives some 35 miles northeast of Letchworth at Ganondagan State Historic Site, within the town of Victor (pop. 11,474). Before European settlement in the late 1700s, Ganondagan was home to some 4,500 Seneca who lived in 150 bark longhouses. Thanks to Jemison and his fellow tribe members, a full-scale replica of a longhouse was erected and opened to the public at Ganondagan in 1998.

"We wanted to give people a sense of how our ancestors had lived," he says. The longhouse, 65 feet long, 20 feet wide and 25 feet high, is fitted with four smoke holes in the roof. Elm bark covers outer and inner walls and the roof. The floor is made of pounded earth. Dozens of raised platform beds line the walls. An assortment of gourd bowls, baskets woven from wood strips, corn-husk mats, fur blankets, snowshoes and lacrosse sticks are stored on ledges reached by notched wooden ladders. A bark-skin canoe hangs from the ceiling.

Jemison describes himself as a "faith-keeper," whose duties include organizing dance performers and banquets for festive and religious occasions. "Members of your clan ask you to become a faith-keeper, and the only choice you have is to say you are ready, or not yet," says Jemison. "I was only ready when I was 50."

Lately, the Finger Lakes have drawn other keepers of faith as well—Amish and Mennonites seeking to preserve a way of life that took root centuries ago. Since the early 1970s, some 600 younger families of these devout Christian sects have moved here from Lancaster County, Pennsylvania, in search of affordable farmland and residences. Their red barns, silver silos and white fences have brought vitality into local agriculture. In Penn Yan (pop. 5,119), a village on the northern end of Keuka Lake, horse-drawn carriages now clip-clop through leafy neighborhoods.

"We complain that our horses eat us out of farm and home, but we hear that gasoline has gotten really expensive," says Mennonite Pauline Weaver, owner of a country store, Weaver-View Farms, renowned for its quilts. Pauline's husband, Ken, manages the family's adjoining 200-acre dairy farm. Pauline moved here from Pennsylvania in 1989 to instruct Mennonite children at a traditional one-room schoolhouse. "My goal was to be an old-maid schoolteacher," says Pauline, who wears a white bonnet, ankle-length dress and, incongruously, black-top sneakers. But in 1990 she married Ken Weaver; today, the couple has six children. "For us it's not a large family," she says.

Selling a quilt that an artisan has worked on all winter gives her great pleasure, she says—except when a buyer complains that he or she could buy a bed for the $500 the quilt costs. "It makes my blood boil," says Pauline. "They have no idea how much effort went into creating this work of art."

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Most of her customers are area visitors who have wandered off the wine trails. Wine-tasting has become the region's most lucrative and popular tourist attraction. In the United States, only California's Napa and Sonoma valleys produce more wine than the Finger Lakes region. Long underrated, local vineyards have begun to garner international attention.

Château Renaissance is a small winery owned by Patrice DeMay, a 48-year-old French expatriate, at the southern tip of Keuka Lake. In France, says DeMay, bureaucratic regulations stifle small businesses. Here, he can label his bottles "champagne," an appellation reserved in France for the sparkling wines of the Champagne region east of Paris. "One French tourist even threatened to report us to the French Embassy," says DeMay. "I told him to go ahead." DeMay has little cause to worry. He sells only 4,000 to 5,000 cases each year, none destined for France. Although the United States now recognizes French claims over the champagne designation, DeMay and other longtime U.S. producers have been exempted by a grandfather clause.

Some of DeMay's equipment is so antiquated that replacement parts have to be custom-made, some by a workshop at the Corning Museum of Glass, in Corning (pop. 10,608), 15 miles west of Mark Twain's studio. Sheathed in glass and flooded by sunlight, the museum draws 325,000 visitors annually to see its collection of more than 40,000 glass objects representing 3,500 years. Some even include hieroglyphs and sarcophagus inlays, all made of glass excavated from sites along the Nile. "Many more ancient Egyptian glass pieces have survived than from the Middle Ages, because in ancient times people were buried with these objects," says curator Tina Oldknow.

For almost a century, until the market for decorative glass declined in the 1960s, Corning was the epicenter of fine glass-cutting in America. Crystal chandeliers, vases and wine glasses from its workshops graced post-Civil War country estates, including the Sonnenberg ("Sunny Hill") Gardens and Mansion in Canandaigua (pop. 11,363), some 70 miles northwest. Here, between 1885 and 1919, banking magnate Frederick Ferris Thompson and his wife, Mary Clark Thompson, built a 40-room Victorian mansion and nine formal gardens on 52 acres showcasing a wide variety of gardening styles.

After her husband's death, Mary traveled the world collecting new landscaping ideas. The Italian Garden's fleur-de-lis-shaped flower beds are planted each year in 15,000 annuals. The Rose Garden contains several thousand new and antique cultivars in shades of crimson, pink, white, yellow and peach. But the Blue and White Garden—featuring pale lilies, forget-me-nots, larkspur and delphinium growing next to a veranda—is more intimate. "This was Mary's favorite," says Sonnenberg horticulturist Dan Camenga.

The Thompsons and their Finger Lakes estate were products of the Gilded Age, a term coined by Mark Twain and the title of the 1873 novel he wrote with Charles Dudley Warner. The phrase evokes the conspicuous consumption of the post Civil War newly affluent. Yet the Thompsons epitomized an even smaller elite, characterized by a distinctive vision and a passion for experimentation, attributes they shared with such major Finger Lakes figures as Elizabeth Cady Stanton, William Letchworth—and Twain himself. Perhaps it has to do with something in the water.

Mennonite Pauline Weaver (with children Timmy, age 2, and Bethany, 9) owns Weaver-View Farms, a store renowned for its quilts. "We complain that our horses eat us out of farm and home, but we hear gasoline is really expensive," she says.

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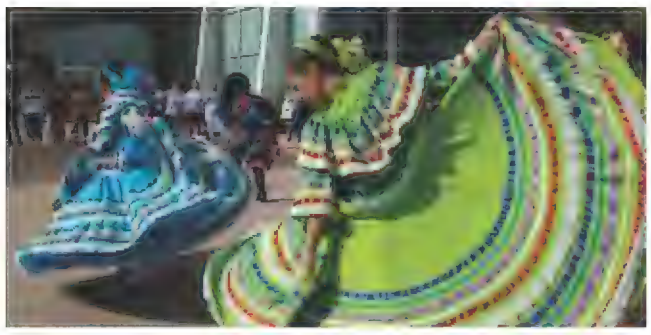

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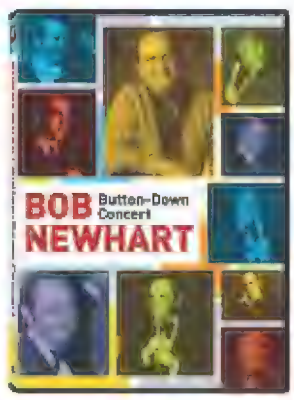

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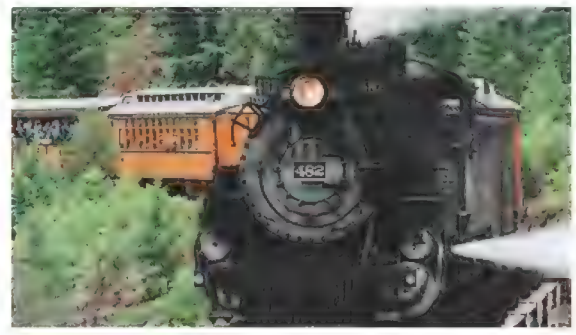

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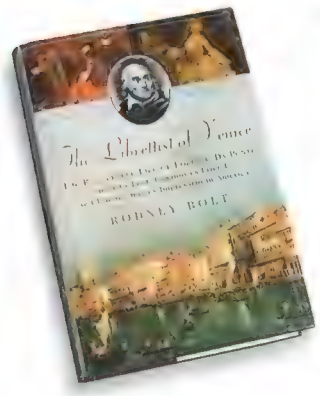
Lorenzo Da Ponte was a hit in Europe: a courtier, a cad, the librettist for Mozart's finest operas. But the New World truly tested his creative powers

BY CHRISTOPHER PORTERFIELD



THE LIBRETTIST OF VENICE

The Remarkable Life of Lorenzo Da Ponte, Mozart's Poet, Casanova's Friend, and Italian Opera's Impresario in America

RODNEY BOLT

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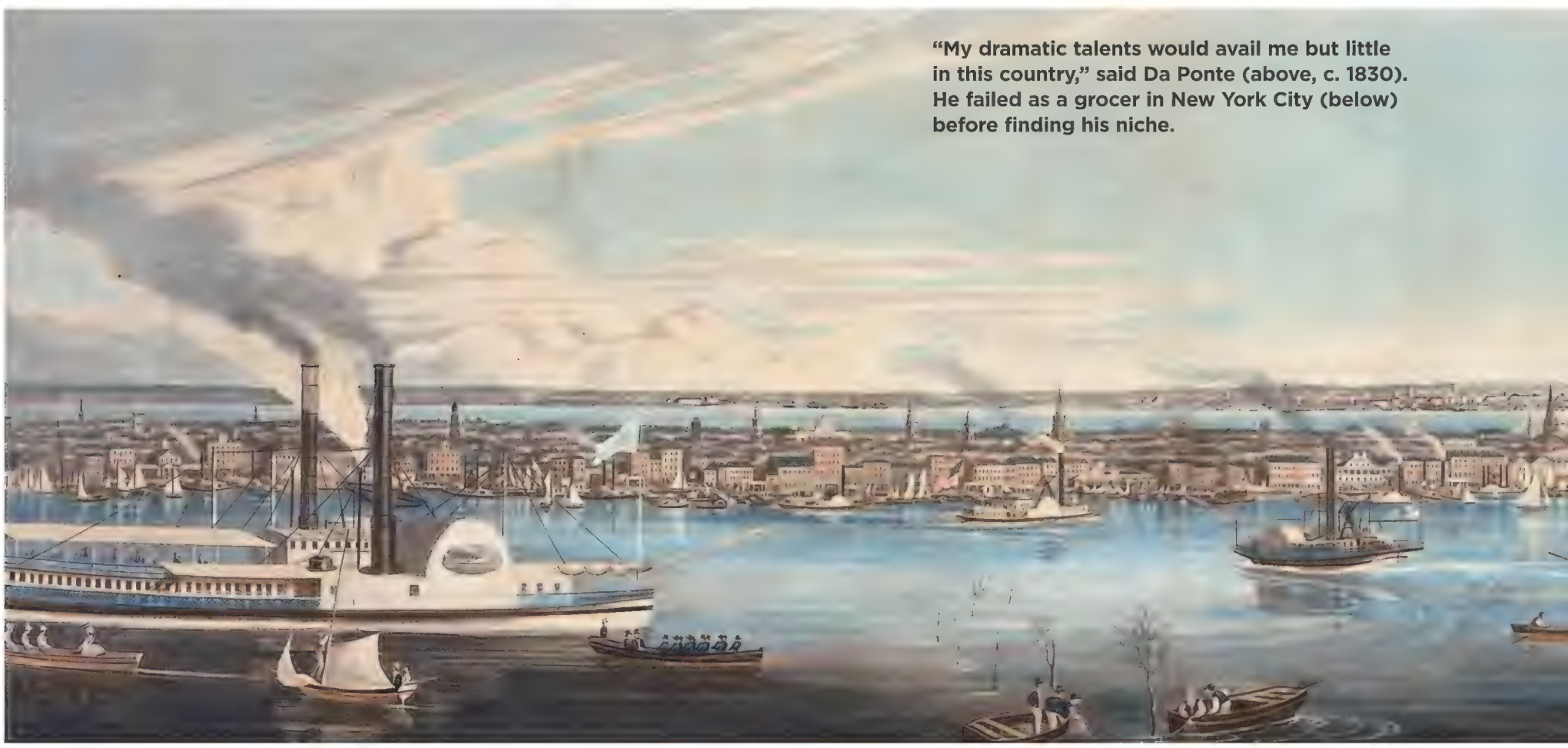
THERE SEEMED nothing remarkable about the Italian passenger who stepped off the packet boat *Columbia* as it docked in Philadelphia on June 4, 1805, except that he was tall and, for a man in his mid-50s, prematurely toothless. During the two-month crossing from London, the *Columbia*'s captain had not even bothered to learn his name, addressing him as "Signor Italiano." The man spoke adequate English and had courtly manners, but he was broke and had to beg a loan from a fellow



"My dramatic talents would avail me but little in this country," said Da Ponte (above, c. 1830). He failed as a grocer in New York City (below) before finding his niche.

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passenger to pay the duty on his few possessions: a violin, some violin strings, a carpet, a tea urn and a trunkful of books.

Although his identity meant nothing on the docks that morning, the stranger was no ordinary immigrant. His story, had he told it to customs officials, would have struck them as fantastic—beyond belief.

He was Lorenzo Da Ponte, the librettist who, with Mozart, had created three of the greatest operas ever written: *The Marriage of Figaro, Don Giovanni* and *Così fan Tutte*. He was a priest, a poet, a freethinker and a friend of Casanova's. He had flourished in the royal courts and glittering societies of Europe, conducted notorious love affairs and collaborated with some of the leading writers and musicians of the age. He had also, at times, endured catastrophic flops, suffered betrayal and defeat in backstage intrigues, been hounded by scandal and fallen into bankruptcy.

And now, having left London one step ahead of a constable who sought to arrest him for bad debts, he had arrived in America to do what he had already been obliged to do several times in his tumultuous career: start over.

During the 33 years that Da Ponte would spend in the aptly named New World, he would need to put forth vast exertions of persistence, resilience and deft improvisation in order to make his way. Fortunately, as recounted in Rodney Bolt's lively new biography, *The Librettist of Venice*, he had displayed these qualities in abundance from the beginning. He was born Emanuele Conegliano, the son of a Jewish leather worker in a small town in the Venetian Republic. When he was a teenager, his father converted to Catholicism, and in accordance with custom Emanuele was baptized in the name of the local bishop, Lorenzo Da Ponte.

He went on to seminary, where he mastered Latin, Greek and Hebrew and showed a flair for writing verse. He was ordained and taught briefly in church schools. But Venice, fash-

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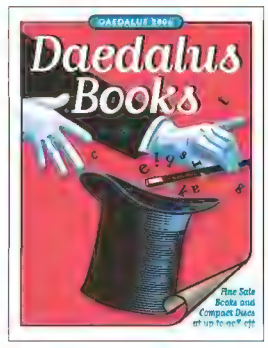

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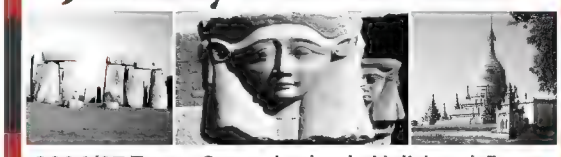

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Mozart was virtually a neighbor of Da Ponte's in Vienna; together they remade the conventions of the *opera buffa.*

ionable, dissolute and nearby, exerted an irresistible lure for a dashing young *abbé* with Da Ponte's wit, charm and ambition. Soon he was mixing with the city's aristocracy, gambling, writing poetry and moving from one mistress to another. (One tried to quiet the neighbors' whispers about "the priest's whore" by claiming to be his sister.)

By 1779, when Da Ponte was 30, Venetian authorities were investigating his *louche* reputation and history of scandal. He had already been convicted of sedition for publishing some fiery poetry excoriating local political corruption. It was all too much for the republic's ruling council, which banished him. For the first of many times in his life, although surrounded by real enough rivals and enemies, he had proved the most effective agent of his own destruction. (He later conceded that he was "like the soldier who, spurred on by the longing for glory, rushes against the mouth of the cannon.") Also for the first of many times, he fled, penniless, across a border, to the Austrian Empire.

After false starts in Dresden and elsewhere, he settled in Vienna and maneuvered his way into an appointment as official poet to the Italian opera company under the patronage of

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Venice exerted an irresistible lure for a young man of Da Ponte's wit and charm. Soon he was mixing with aristocrats, gambling and moving from one mistress to another.

Emperor Joseph II, a post he held from 1783 to 1791. These were his glory years. He was in demand to write librettos for Salieri, Paisiello and other eminent composers of the day.

What we most want to hear about, however—the magical collaboration with Mozart—is curiously undocumented. Virtually neighbors, the two men had no need to write to each other, so all we get in Bolt's biography is passing mentions in Mozart's letters and unilluminating descriptions in Da Ponte's less-than-reliable memoirs: "As soon as I wrote the words, Mozart set them to music."

What we do know is that by this time, the early 1780s, Da Ponte was a skillful dramatic craftsman, and Mozart was, well, Mozart. Together, they took the erstwhile knockabout conventions of *opera buffa* and invested them with a new seriousness. They created characters of rare depth and psychological richness, and infused comic plots with a worldly, humane and compassionate view of human frailty.

Meanwhile, Da Ponte's frailties took what was becoming their accustomed toll. He had more affairs and fathered an illegitimate child (his third, after two in Venice). He lost his footing in a shifting political landscape, and his career began to have more downs than ups. When he was finally sacked from the opera house,

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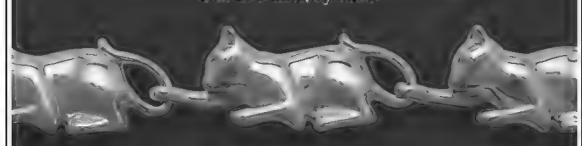

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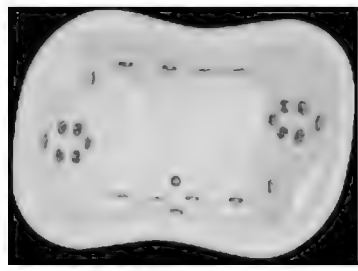

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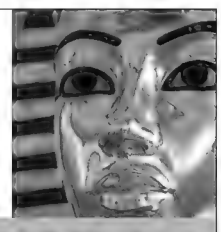

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His failings were never mean. He wasn't a cynic like Casanova (who, when Da Ponte had financial trouble, suggested his wife exploit her charms for money).

he went to Trieste, where the new emperor, Leopold II, was traveling, to plead for reinstatement. He lost his case but found a wife.

She was Nancy Grahl, whose German-Jewish father and French mother had lived for years in England and embraced Anglicanism. Spirited, attractive and like Da Ponte an accomplished linguist, she was 20 years younger than the 43-year-old reprobate. The wedding ceremony, if there was one, was probably Jewish, an ironic closing of the circle for Da Ponte, who had long abandoned his priestly garb and vocation. Nancy would be his staunch, patient wife for 40 years and bear him six children.

They spent the first decade or so of their marriage in London. Again, Da Ponte wangled a job as poet to the local Italian opera company. But in contrast to Vienna, he had few opportunities to write new librettos, being relegated largely to the tasks of cutting, patching and revising works for revivals.

He remained, as always, a prolific versifier, translator and polemical writer, but his literary work was not lucrative. In London, he branched out to become a seller of Italian books and a publisher of librettos. Nancy opened a stylish coffee room in the opera house. She prospered; he didn't. When financial storm clouds gathered, she went on ahead to America, where several of her relations had set-

Casanova shared with his friend Da Ponte "an unmistakable vein of vanity," in the view of a mutual acquaintance.

tled. As soon as Da Ponte arrived in Philadelphia almost a year later, and presumably after borrowing more money for the fare, he hurried to New York City to join her.

Da Ponte immediately had to face up to a fundamental difference between his new home and England or Austria: the raw, young United States had no opera world for him to latch onto. "I well knew that my dramatic talents would avail me but little in this country," he wrote. And he quickly proved, once more, that his other talents did not include running a business. Using Nancy's savings, he made two disastrous ventures, first as a grocer in New York and Elizabethtown, New Jersey, and later as a dealer in medicines and general merchandise in Sunbury, in central Pennsylvania.

"Imagine how I must have laughed at myself," he wrote, "every time my poet's hand was called to weigh out two ounces of tea, or measure half a yard of 'pigtail' [plug tobacco], now to a cobbler, now to a carter, or pour out, in exchange for three cents, a morning dram." Yes, but it was no laughing matter.

Salvation—and the discovery of a new mission—came from an encounter in a New York bookstore with a cultivated young man who was

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captivated by Da Ponte's firsthand knowledge of Italian literature. The man, who would prove a loyal friend and benefactor, was Clement Moore, later to achieve a sort of immortality as the author of "The Night Before Christmas." He gave Da Ponte entree to his patrician circle of friends and family.

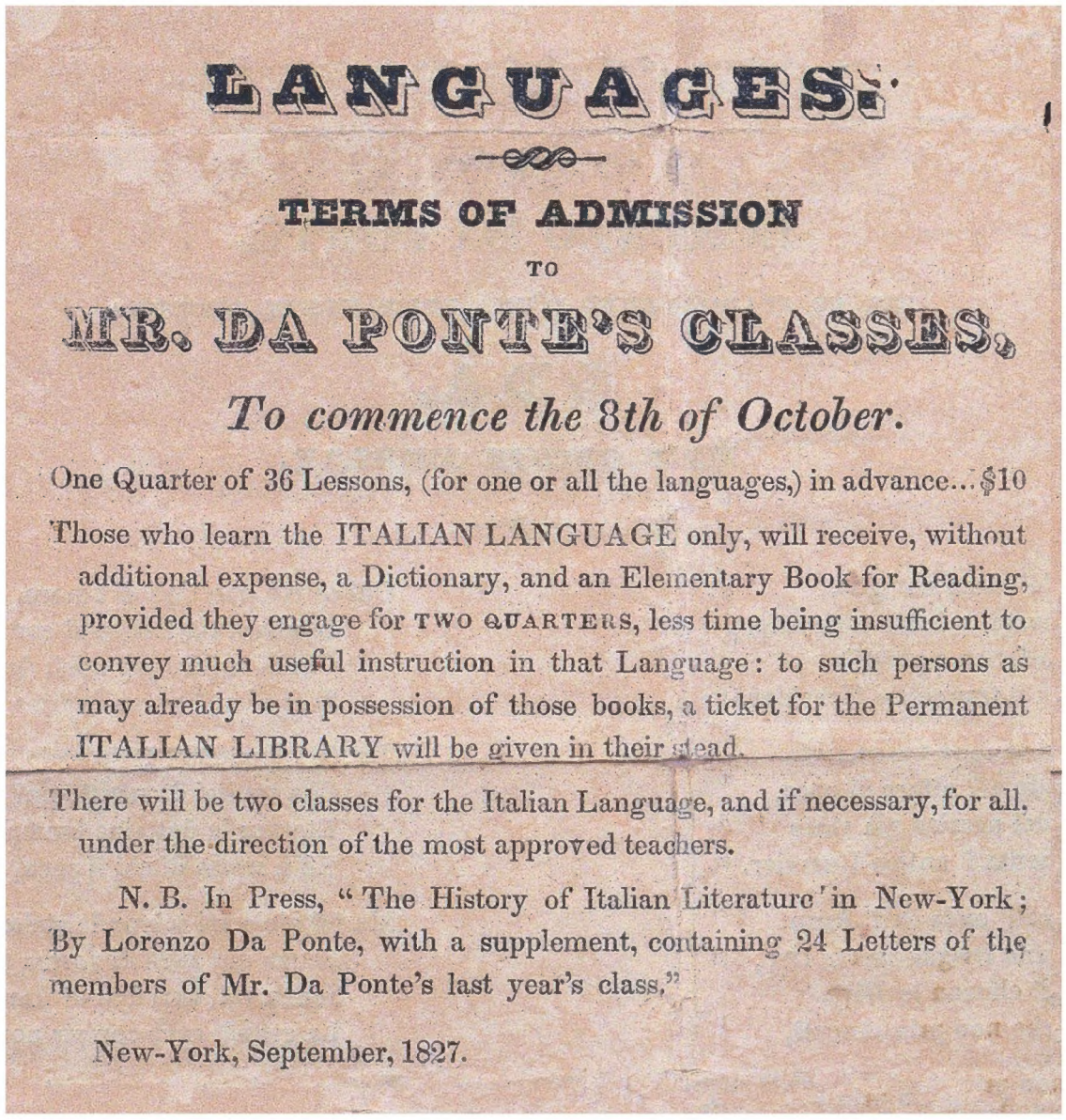
The old rogue was launched again—as a teacher. Never mind that Italian language and literature were, as Da Ponte put it, "about as well known in this city as Turkish or Chinese." Here was another cannon-mouth for him to rush against. On and off for the rest of his life, he tutored, he established schools and took in boarders, he staged "assemblies" at which his charges spoke only Italian and performed short comedies and operas. He even had some success in another fling at bookselling, numbering among his customers the Library of Congress.

In short, he established himself, in the words of pianist and musicologist Charles Rosen, as "the unofficial ambassador of Italian culture in America."

At the behest of Columbia University's board of trustees, one of whom was Moore, Da Ponte became, at 76, the university's first professor of Italian. The post was largely honorific, and after the first year he attracted no students. Still, it was a milestone in Italian studies in America. Da Ponte also had a hand in establishing New York's first opera theater. Typically, he was outflanked by his fellow entrepreneurs and ended up with no management role; he also went so far into hock that he had to sell his private collection of books. The venture folded after four years, but it laid important groundwork for the Metropolitan Opera, which came along 50 years later.

Italian to the core, rooted in 18th-century Europe, Da Ponte nevertheless was, when he died at 89 in 1838, a proud American citizen. He was buried not in Venice or Vienna but in New York, where he lies today.

Indeed, what is most striking in the whole Da Ponte saga is how American



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N. B. In Press, "The History of Italian Literature in New-York; By Lorenzo Da Ponte, with a supplement, containing 24 Letters of the members of Mr. Da Ponte's last year's class."

New-York, September, 1827.

In New York, Da Ponte wrote, Italian was "about as well known . . . as Turkish or Chinese." But an encounter with Clement Moore launched a new career as a teacher.

he became. He lived in the United States longer than in any other country, including Italy. Although he had no quarrel, in principle, with royalty or aristocratic societies, he took to America's democratic spirit. "I felt a sympathetic affection for the Americans," he wrote. "I pleased myself with the hope of finding happiness in a country which I thought free."

His character, for better or worse, displayed many of the traits that we like to think of as distinctively American, starting with his boundless optimism and his endless capacity to reinvent himself. His failings—he was vain and gullible, a schemer and a victim of his passions—were never dishonest or mean-spirited. He was not a cynic like Casanova (who once, when Da Ponte was in a financial scrape, wrote to suggest that Nancy should exploit her charms for money). Warmth, generosity, enthusiasm and an indomitable joy in life were his cardinal qualities.

He never forgot that his primary genius was for writing librettos, and his peak achievement his work with Mozart; but he had a lesser genius for teaching, which yielded the greatest achievements of his American years. The countless men and women who were touched by this gift, wrote Clement Moore, would remember their sessions of tutoring with Da Ponte "as among the sweetest moments of their existence."

Significantly, one of the poems that got Da Ponte in trouble back in Venice was an elegy inspired by the revolutionary fervor that swept the American colonies in the 1770s, titled "The American in Europe." It caused a furor. But in the long run it was nothing compared with the impact of the Italian in America.

CHRISTOPHER PORTERFIELD *writes on the arts for* Time *and other publications.*

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The Wrath of Khan

Even IRS auditors will tremble in my presence! BY BRUCE MCCALL

The first American to be able to claim descent from Genghis Khan has been discovered. He is Thomas R. Robinson, an associate professor of accounting at the University of Miami in Coral Gables, Fla. —The *New York Times*, June 6

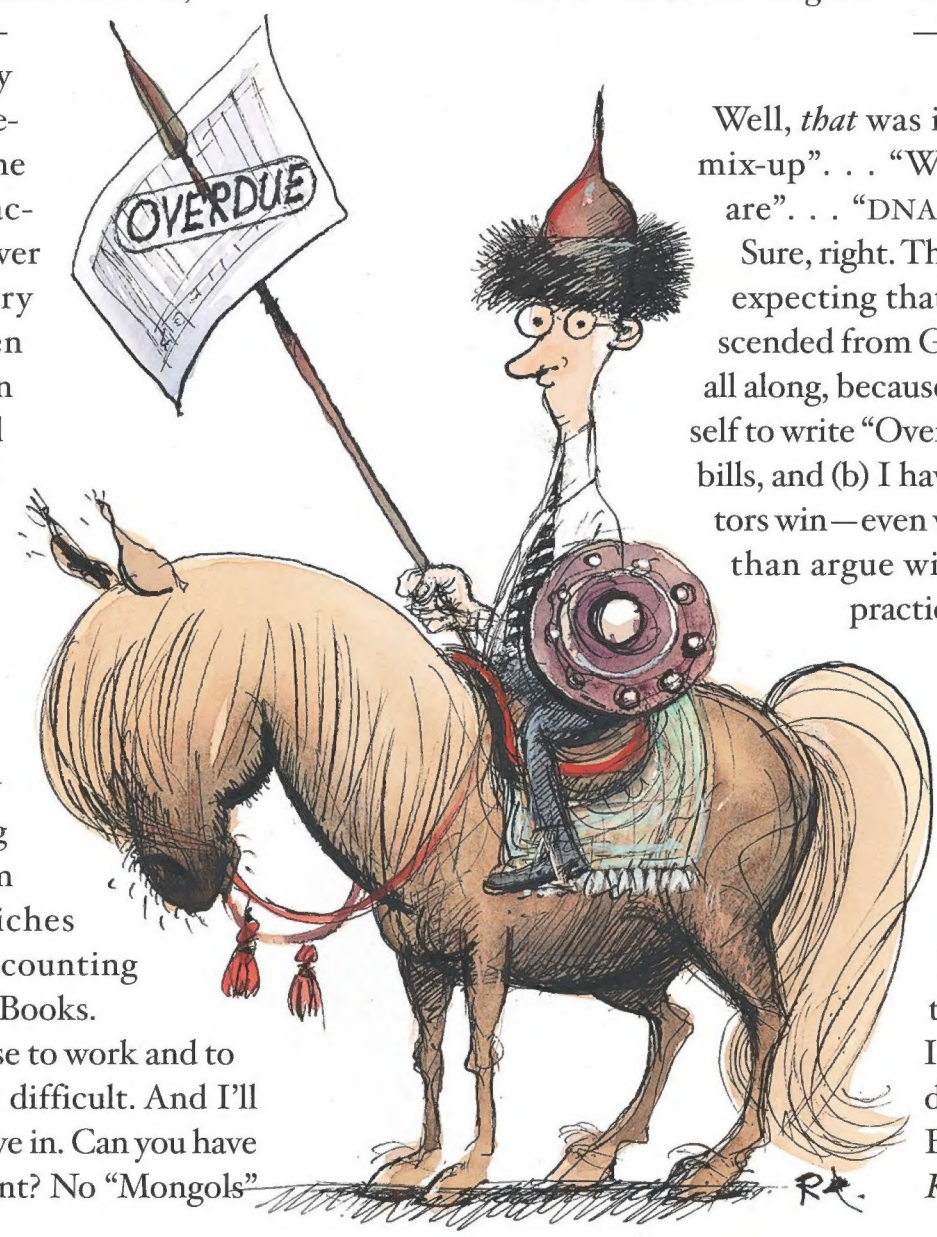
ME, TOMMY ROBINSON, ACCOUNTANT—a direct blood descendant of the mighty Genghis Khan, a.k.a. Temujin, born 1162, died 1227! I could never explain until now why I always wore Mom's big fur hat when I was a kid, or my strange attraction to charred meat, or why I named the family Chihuahua Genghy, but now it all becomes clear: it was that DNA pumping into my system from a thousand years ago!

No wonder I cruised right through every accounting course at the top of the class. I had to, to fulfill my destiny and become the modern-day Genghis Khan with an eyeshade and a calculator, the most feared chartered accountant the world has ever seen, the scourge of every H & R Block office! Even IRS auditors will tremble in my presence! I'll command whole vast armies of bookkeepers and notary publics and Quicken experts, and they'll have to hand over gifts—chickens, precious spices, Rolexes—and call me "Sire." I'll show no mercy to those who resist buying my six-CD set on the Tom Robinson Road to Riches Home Double-Entry Accounting System, With Two Sets of Books.

Of course, riding a horse to work and to the mall—that'll be more difficult. And I'll have to find a felt tent to live in. Can you have a corner office in a felt tent? No "Mongols" listing in the Yellow Pages, so recruiting a horde of bloodthirsty CPAs with their own spears and clubs and hardy Mongolian ponies is going to be tricky. But that kind of stuff wouldn't stop G.K. in his quest to conquer the world, and it won't stop this full-blown cruel-yet-fearless descendant, either.

Ah, there's the phone: probably Anderson Cooper begging for an interview. Make a note to find a bearskin jerkin, one of those horned helmets, big fur boots; gotta look Khan-like on TV.

DNA tests have furnished a double surprise for Thomas R. Robinson, an associate professor of accounting at the University of Miami. The first was being told he was descended from Genghis Khan. The second was learning last week that the first test was wrong. —The *New York Times*, June 21



Well, *that* was interesting. "Some kind of mix-up". . . "We're as shocked as you are". . . "DNA evidence isn't foolproof." Sure, right. The honest truth is, I was half-expecting that phone call. So I'm *not* descended from Genghis Khan. I suspected it all along, because (a) I could never bring myself to write "Overdue" or "Please!" on clients' bills, and (b) I have to admit it, I let IRS auditors win—even when they're wrong—rather than argue with them. Plus which, this practice of mine is going along just fine; no need to go out and conquer the accounting world—which by the way would mean leaving the wife and kids for weeks at a time while I was off looting and pillaging and burning things down. So no thanks. And one last thing: I can multiply two sets of ten-digit numbers in my head. Bet *Mister Big Shot Genghis Khan* couldn't do that.

RICHARD THOMPSON